

[H.A.S.C. No. 116-72]

HEARING
ON
NATIONAL DEFENSE AUTHORIZATION ACT
FOR FISCAL YEAR 2021
AND
OVERSIGHT OF PREVIOUSLY AUTHORIZED
PROGRAMS
BEFORE THE
COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES
ONE HUNDRED SIXTEENTH CONGRESS
SECOND SESSION
—
FULL COMMITTEE HEARING
ON
**THE FISCAL YEAR 2021
NATIONAL DEFENSE AUTHORIZATION
BUDGET REQUEST FOR THE
DEPARTMENT OF THE AIR FORCE**
—

HEARING HELD
MARCH 4, 2020



—
U.S. GOVERNMENT PUBLISHING OFFICE

41-930

WASHINGTON : 2021

COMMITTEE ON ARMED SERVICES

ONE HUNDRED SIXTEENTH CONGRESS

ADAM SMITH, Washington, *Chairman*

SUSAN A. DAVIS, California	WILLIAM M. "MAC" THORNBERRY, Texas
JAMES R. LANGEVIN, Rhode Island	JOE WILSON, South Carolina
RICK LARSEN, Washington	ROB BISHOP, Utah
JIM COOPER, Tennessee	MICHAEL R. TURNER, Ohio
JOE COURTNEY, Connecticut	MIKE ROGERS, Alabama
JOHN GARAMENDI, California	K. MICHAEL CONAWAY, Texas
JACKIE SPEIER, California	DOUG LAMBORN, Colorado
TULSI GABBARD, Hawaii	ROBERT J. WITTMAN, Virginia
DONALD NORCROSS, New Jersey	VICKY HARTZLER, Missouri
RUBEN GALLEGO, Arizona	AUSTIN SCOTT, Georgia
SETH MOULTON, Massachusetts	MO BROOKS, Alabama
SALUD O. CARBAJAL, California	PAUL COOK, California
ANTHONY G. BROWN, Maryland, <i>Vice Chair</i>	BRADLEY BYRNE, Alabama
RO KHANNA, California	SAM GRAVES, Missouri
WILLIAM R. KEATING, Massachusetts	ELISE M. STEFANIK, New York
FILEMON VELA, Texas	SCOTT DESJARLAIS, Tennessee
ANDY KIM, New Jersey	RALPH LEE ABRAHAM, Louisiana
KENDRA S. HORN, Oklahoma	TRENT KELLY, Mississippi
GILBERT RAY CISNEROS, Jr., California	MIKE GALLAGHER, Wisconsin
CHRISSY HOULAHAN, Pennsylvania	MATT GAETZ, Florida
JASON CROW, Colorado	DON BACON, Nebraska
XOCHITL TORRES SMALL, New Mexico	JIM BANKS, Indiana
ELISSA SLOTKIN, Michigan	LIZ CHENEY, Wyoming
MIKIE SHERRILL, New Jersey	PAUL MITCHELL, Michigan
VERONICA ESCOBAR, Texas	JACK BERGMAN, Michigan
DEBRA A. HAALAND, New Mexico	MICHAEL WALTZ, Florida
JARED F. GOLDEN, Maine	
LORI TRAHAN, Massachusetts	
ELAINE G. LURIA, Virginia	
ANTHONY BRINDISI, New York	

PAUL ARCANGELI, *Staff Director*

KATY QUINN, *Professional Staff Member*

JESSE TOLLESON, *Professional Staff Member*

EMMA MORRISON, *Clerk*

CONTENTS

	Page
STATEMENTS PRESENTED BY MEMBERS OF CONGRESS	
Smith, Hon. Adam, a Representative from Washington, Chairman, Committee on Armed Services	1
Thornberry, Hon. William M. "Mac," a Representative from Texas, Ranking Member, Committee on Armed Services	3
WITNESSES	
Barrett, Hon. Barbara, Secretary of the Air Force	4
Goldfein, Gen David L., USAF, Chief of Staff, United States Air Force	5
Raymond, Gen John W., USSF, Chief of Space Operations, United States Space Force	7
APPENDIX	
PREPARED STATEMENTS:	
Barrett, Hon. Barbara, joint with Gen David L. Goldfein and Gen John W. Raymond	61
DOCUMENTS SUBMITTED FOR THE RECORD:	
[There were no Documents submitted.]	
WITNESS RESPONSES TO QUESTIONS ASKED DURING THE HEARING:	
Mr. Brown	83
Ms. Haaland	84
Ms. Speier	83
Mr. Waltz	83
QUESTIONS SUBMITTED BY MEMBERS POST HEARING:	
Mr. Cisneros	91
Mr. Conaway	87
Mr. Graves	87
Mr. Lamborn	87
Mr. Mitchell	91
Mr. Scott	92
Mr. Vela	89

**THE FISCAL YEAR 2021 NATIONAL DEFENSE
AUTHORIZATION BUDGET REQUEST FOR THE
DEPARTMENT OF THE AIR FORCE**

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
Washington, DC, Wednesday, March 4, 2020.

The committee met, pursuant to call, at 10:01 a.m., in room 2118, Rayburn House Office Building, Hon. Adam Smith (chairman of the committee) presiding.

OPENING STATEMENT OF HON. ADAM SMITH, A REPRESENTATIVE FROM WASHINGTON, CHAIRMAN, COMMITTEE ON ARMED SERVICES

The CHAIRMAN. Good morning. We will call the meeting to order.

We are here this morning to continue our posture hearings in preparation for the 2021 NDAA [National Defense Authorization Act]. And this morning, we will hear from the Department of the Air Force and the Space Force Command on the budget request for their departments, the President's budget request from fiscal year 2021.

We are joined by the Honorable Barbara Barrett, Secretary of the Air Force, and it is her first time before our committee, so welcome, and I look forward to your testimony.

General David Goldfein, who is the Chief of Staff of the Air Force, and in all likelihood, this may well be your last time before the committee. So the beginnings and the endings, and we certainly appreciate your service and also your consistent candor before this committee and in working with us so well over your time as the Chief of Staff. We appreciate that leadership.

And we are joined by General John Raymond, Chief of Space Operations for the U.S. Space Force. Not only is this his first time before the committee, but it is the first time having a representative from the U.S. Space Force, and the newly created U.S. Space Force. So we are very anxious to hear from you about how the setup of that is going.

I thank our witnesses for being here. And I think that the challenge going forward, which we have talked about a lot in this committee is, as always happens with us, so you are consistently asked to do more than you have the resources to do, and how you manage that, I think, is the great challenge at the Pentagon right now, in terms of, you know, how do we figure out maybe to get more resources, how do we figure out to perhaps change what the strategy is to better match those resources. But in doing that, there is considerable risk in terms of how we make sure that we are prepared for what it is that we do choose to do.

And I was particularly interested in the study that you did, I think came out, that said, you have roughly 319 squadrons and you would like to have 386. And the trouble with that is you are highly unlikely to get 386. So I worry about what that means in terms of what our actual plan is and our ability to execute it. If we set up and say, well, we have to have this much, and we don't, then we are sort of scrambling around, unable to truly be prepared for any mission, since we are trying to prepare for more missions than we can possibly do, if that makes sense. I would like to know how we rationalize that.

And also, something that has come up consistently is, so that is how many squadrons you want, but just with our discussion of ships and this mythical number of ships that at some point in the future we are going to have, the truly important thing is, how many of our squadrons, or ships for that matter, are operational. And that seems to have been a major challenge. We get consistent reports about, you know, pick an airframe there. We have, you know, 110 of them, but on any given day, only 60 of them are ready to go. Is there a way to improve that, and what are you focused on to make sure that if we have the actual piece of equipment, that it works? Because that is a frustrating misuse of resources if you have something and you can't get it to do what it is supposed to do.

Along those lines, one of the ways that we have tried to rationalize the irrational situation I just described is by relying excessively on the OCO [Overseas Contingency Operations fund]. One of my all-time favorite things was the phrase they came up with last year where they actually eliminated the subterfuge and came up with something that they called FOCO—fake OCO. Just being very honest about it. We just—you know, we want this money. We don't want to put it on the budget because we, you know, have budget caps to deal with, so we are going to call it emergency funding so it can be, you know, quote, off budget, unquote.

And the Air Force relies quite a bit on that. I forget the statistics off the top of my head. I think it is like \$21.6 billion in OCO for the Air Force, and the estimates were, I think, less than \$2 billion that was for actual overseas contingency operations. So, you know, how you plan to not rely on that long term is enormously important.

And tied into all of this, as a number of members I am sure will raise, is the bitter irony that we also get your unfunded requirements list, while at the same time, we just had the \$3.8 billion reprogramming, where money, for instance, was taken out of the F-35 program, to go to the wall, which as Ms. Davis helpfully pointed out in an earlier hearing, is not in the National Defense Strategy at all. We are supposed to build the Pentagon budget and our strategy based on the National Defense Strategy. It doesn't say anything in there about money for a southern border wall, and yet we are going to take the money out of our programs, put it in there, and then come back to us and say, oh, it is an unfunded requirement. It is like, no, it was funded. You took the money and spent it someplace else. That is an enormous problem, and it is causing problems at the Department of Defense, and we should not simply let that go by.

And then there is the Space Force. And I will tell you, I have always been fairly ambivalent about that. At the end of the day, I trusted Mr. Rogers and Mr. Cooper as the two chairs of the committee that created it, and I also trust the fundamental idea behind it, and that is that space is central to everything we do. It is the center of our command and control structure. It makes almost everything we do within the military operate. It deserved to have a special segment to make sure that we are training the people who work in that arena properly and for that mission. And I get that, I understand that, and I think it is a reasonable thing to do.

The concern is, is it just another bureaucracy? Do we get a better, more focused look at how we take care of our space needs within national defense? Or do we get a bunch more generals and a lot more staff doing basically the same thing? And I think, General Raymond, that is your great challenge, is to make sure that it works in an efficient and effective way and isn't just another bureaucracy.

And with that, I will yield to the ranking member, Mr. Thornberry, for his opening statement.

STATEMENT OF HON. WILLIAM M. "MAC" THORNBERRY, A REPRESENTATIVE FROM TEXAS, RANKING MEMBER, COMMITTEE ON ARMED SERVICES

Mr. THORNBERRY. Thank you, Mr. Chairman.

And let me join in welcoming each of our witnesses today. And if this should be General Goldfein's last appearance before the committee, I also want to thank him and Dawn for both of your service to the country over a long period. It has been exceptional and not just in your current position. And we are very grateful for all that both of you have done.

There is no question this is a challenging time for the Air Force, not just because much of what we talk about when we say great power competition falls on y'all's shoulders, but also because there is this internal change going on at the same time.

Now, we have dealt with such situations before, such as the end of World War II, and came out pretty well, but it is a challenging time for each of you. And like we talked about a bit last week with the Navy, I think what is most helpful is if we can have a—not necessarily every detail laid out, but a plan, an approach going forward.

Now, that is particularly true when it comes to space, because you are a new organization. We are all beginning to think of space in different ways, as a warfighting domain, and we need that sort of vision about where we ought to go, but it is also true with the Air Force. The controversy over the last week was somebody saying, we don't need any manned fighters anymore. And technology is changing. Adversaries are changing. And so this vision of where we move forward, to me, is just as important as this particular year's budget request. They need, obviously, to go together. But as I say, there is a lot on y'all's plates, but I have full confidence in your ability to deal with it. Thanks for being here.

I yield back.

The CHAIRMAN. Thank you.

Secretary Barrett. Or I am assuming you are going first. Go ahead.

**STATEMENT OF HON. BARBARA BARRETT, SECRETARY OF
THE AIR FORCE**

Secretary BARRETT. Yes, Mr. Chairman.

Chairman Smith, Ranking Member Thornberry, members of the committee, thank you for inviting us to appear before you today. I am especially privileged to be joined by two exemplary chiefs, Chief Goldfein, on what may be his last appearance before this committee as the Chief of Staff of the United States Air Force, and the exemplary Chief Jay Raymond, who is the Chief of Space Operations and leading that in its standup.

The international security environment changes unpredictably. China and Russia challenge American capabilities with new technologies and systems. Iran and North Korea threaten regional and global stability, while violent extremism remains a global menace. The National Defense Strategy calls on the Department of the Air Force as a critical component of the joint force to deter, and if deterrence fails, to defeat these threats.

This fiscal year's—the 2021 budget request—sets the course for the Department to accomplish these aims. Specifically, the Department of the Air Force invests in future forces that allow us to connect the joint force, dominate space, generate combat power, and conduct logistics under attack. We will continue to present ready forces to combatant commanders as we defend the homeland, build strategic deterrence, and counter violent extremism.

Finally, we will strengthen the foundation of our forces, our airmen and space professionals, as we develop and care for our people and their families.

This budget submission shifts force design to create irreversible momentum toward achieving the mission of the National Defense Strategy, while growing strong and resilient leaders and families.

The top policy priority for the Department is the successful launch of the United States Space Force. The space domain is integral to the joint team's success, not just in space, but in all war-fighting domains.

The Department of the Air Force supports a lean, agile Space Force to preserve access to space for America and our allies, while deterring and, if necessary, defeating malicious actors. The success of the United States Space Force will be measured by how well we protect freedom of access to, through, and from space.

In space and air, our most important investment is in connecting the joint force. We are developing the technologies to connect every sensor, every shooter, and every echelon of command to enable seamless Joint All-Domain Operations. This battle network is essential to defeating current and future threats.

We are also directing pivotal resources to recruit and retain the best people our Nation has to offer. We are an inclusive and diverse force and are modernizing our promotion system, while investing in the professional development of airmen and space professionals.

The Department is expanding ongoing efforts to support and care for families. We are tackling privatized housing and PFAS [per-

and polyfluoroalkyl substances] challenges. Along with our sister services, we encourage State reciprocity for occupational licensing for spouses and quality schools for our children. And we are investing in professionally designed and advised programs to reduce suicides and sexual assaults.

To fund future air and space forces that are capable of defending the Nation against a peer competitor, we must divest some aging legacy systems. This budget retires limited numbers of aircraft, consolidating resources to increase readiness in remaining aircraft and invest in recapitalization and modernization. This includes investing in GPS [Global Positioning System] 3 satellites with signals that are three times more accurate and up to eight times more antijam resilient than previous generations.

We thank this committee and the entire Congress for fully funding the recovery efforts to rebuild Tyndall and Offutt Air Force Bases. We will seek additional support as our installations and personnel assist with the ongoing COVID-19 [Coronavirus Disease 2019] quarantine.

Ladies and gentlemen, with your continued support, America's air and space forces stand ready. We look forward to your questions.

[The joint prepared statement of Secretary Barrett, General Goldfein, and General Raymond can be found in the Appendix on page 61.]

The CHAIRMAN. Thank you.
General Goldfein.

STATEMENT OF GEN DAVID L. GOLDFEIN, USAF, CHIEF OF STAFF, UNITED STATES AIR FORCE

General GOLDFEIN. Chairman Smith, Ranking Member Thornberry, distinguished members of the committee, it is an honor to present my last budget submission for the first time with both Secretary Barbara Barrett, the 25th Secretary of the Air Force, and General Jay Raymond, the first Chief of Space Operations. These are indeed historic times. So I will defer all discussion on space matters to Chief Raymond, but I want you to know, it is my top priority to make him and his new service successful.

So my bottom line up front. This budget, building on the last three, offers the most aggressive package of strategic trades we have made as a Department in over two decades to achieve complete alignment with the National Defense Strategy and secure our Nation's military superiority for the next decade.

Secretary Esper's guidance for this budget build was crystal clear. Build an Air Force and a Space Force that can compete, deter, and win shoulder to shoulder with our joint teammates and our allies and partners against a nuclear peer in an era of great power competition.

This budget is designed to achieve this objective, and we are asking for your support to make the tough but necessary trades we will discuss today.

In numerous war games against our best assessment of the threat in 2030 and beyond, as Secretary Barrett stated, we found that investment in four key areas provided the Air Force we need to prevail.

First, this budget connects the joint force in ways we are not today connected in order to truly fight as a joint team. Under the leadership of our Chairman, General Mark Milley, the Joint Chiefs and combatant commanders are fully engaged in developing a new doctrine of warfare called Joint All-Domain Operations.

Under this new warfighting construct, the Air Force is the designated lead service to connect platforms, sensors, and weapons from all domains, all services, and our allies and partners, so we can truly operate at the speed of relevance. We call it Joint All-Domain Command and Control, or JADC2 for short, and we are moving out quickly. Every 4 months, we host a demonstration and link joint capabilities that are not currently connected to advance Joint All-Domain Operations to the next level. I look forward to describing what we have achieved to date and where we are headed during questioning.

Second, we must dominate space. Chief Raymond will cover investments in this critical domain of operations.

And our third area of focus is generating combat power, beginning with our nuclear enterprise. This budget moves us forward to recapitalize our two legs of the triad and their critical nuclear command and control that ties it all together.

Fourth, this budget invests in a new way of approaching how we keep our joint team deployed and sustained in contested combat environments. We must assume our logistics enterprise will be under attack.

But the foundation of this budget submission is the greatest treasure in our Nation's arsenal, our airmen, and those who will join the Space Force. We look forward to working with this committee to ensure we keep faith with the airmen that will defend our Nation and support their families entrusted to our care.

As this committee is aware of, the 2021 top line is relatively flat from last year, well short of the 3 to 5 percent growth required to properly support the NDS [National Defense Strategy]. In a flat-budget environment, if a service is to move forward, it must do two things. It must make better use of what it has by connecting all platforms, sensors, and weapons in a battlefield network, JADC2. And it must find internal savings to pay for new capabilities.

So Chief Raymond and I held our own "night court" and identified \$21 billion across the FYDP [Future Years Defense Program] by retiring the oldest of our legacy weapon systems that are either not survivable or do not contribute significantly to the 2030 peer fight.

Not one of these trades is easy. Every weapon system we are asking to retire has performed well in the current fight, but many are at the end of their service life and have no future in a nuclear peer fight. This is today's hard reality.

Not surprisingly, of the services, the air and space forces have the largest classified portfolio of investment. This makes the story harder to tell, since most of what we are retiring is unclassified and visible, while many of our game-changing investments are classified and therefore invisible.

And we want to thank many of you for taking our classified briefing and offer it to any of you or your staff between now and end-

game. When you see what we are trading for, our budget submission will make perfect sense.

If we are to achieve truly meaningful gains for our Nation's security through implementing the NDS in a flat-budget environment, we must work together on these hard trades.

Chairman, I am honored to be the 21st Chief of Staff of the Air Force. If we go to war this year against a nuclear peer, I am a hundred percent confident we have what we need to win. And I can say that because of decisions made by our predecessors, men like John Jumper and Mike Ryan. Such is the lead time for building an Air and a Space Force.

I believe it is our job to ensure that when Air Chief 24 sits in front of this committee in 2030, side by side with Space Chief No. 4, they will be able to state with equal confidence that our Nation's Air and Space Forces have what they need to win. And with your support, we can achieve this goal.

Thank you, sir.

The CHAIRMAN. General Raymond.

STATEMENT OF GEN JOHN W. RAYMOND, USSF, CHIEF OF SPACE OPERATIONS, UNITED STATES SPACE FORCE

General RAYMOND. Chairman Smith, Ranking Member Thornberry, distinguished members of the committee, it is an honor to testify before this committee this morning. And this is my first appearance in front of the entire committee, and I think it underscores the significance our Nation has placed in elevating space to a level commensurate with its importance to national security.

Since the historic establishment of the United States Space Force on December 20, 2019, we have been moving out with speed and focus to meet the requirements of the National Defense Strategy. As the Air Force's first—as the Space Force's first Chief of Space Operations, I am humbled by the great responsibility entrusted to me. And on behalf of the space professionals that I am privileged to lead, I would like to personally thank you for your leadership in establishing our new service.

Under the strong leadership of Secretary Barrett—and I would note that the Secretary made the establishment of the United States Space Force the number one priority for the Department of the Air Force—and shoulder to shoulder with my partner and fellow service chief, Dave Goldfein, we are establishing a Space Force that is lean, agile, and mission focused. You have given us an opportunity to build this service to enhance the lethality of our joint force, while optimizing our ability to dominate in space.

I want to also, if you wouldn't—if you would allow me to take a minute to thank Dave and Dawn Goldfein for their leadership in the United States Air Force. I have had the privilege of serving under General Goldfein's leadership for several years, and I have known him longer. I will tell you, leadership is a team sport, and there is no better team to follow than Dave and Dawn Goldfein. So, sir, thank you.

For decades the United States has had the luxury of operating in a benign space environment, operating the world's best capabilities to fuel our American way of life and our American way of war. Today, potential adversaries have taken notice and are catching up

fast. Although we remain the best in the world, our advantage is eroding as adversaries are building space capabilities for their own benefit and fielding counterspace systems to negate our access to space and the advantage that that access provides to our Nation and those of our allies.

This budget prioritizes space. It funds it to a level of \$15.4 billion, representing approximately \$900 million increase this fiscal year. Specifically, the budget funds for a strong pivot toward space superiority and the foundational elements of space situational awareness, command and control, and training infrastructure that is required. Our National Defense Strategy demands it, and I appreciate the support you have provided over the last couple of years, and I ask for your strong support once again.

You know, it has been 73 years since the United States established a separate armed service. That was the Air Force. I have spent 35½ years in that service, proudly in that service, but in December, I transferred over to the Space Force, and now I am about a little over 2 months in. We have been given an unprecedented opportunity to build a service unconstrained by past constraint—constructs and thinking. And we are taking full advantage of this occasion to do just that, with a forward-looking, innovative approach that seeks to optimize manning, flatten organizations, and streamline processes necessary to move at speed.

When fully established, we may not look like the other services you have become accustomed to, but we will be equally proficient at providing space forces ready and willing to protect the U.S., allied interests, in space, while providing unequalled capability to the joint force. This is critical given the warfighting domain that we find ourselves in today.

To that end, I am so proud of the professionals that I am privileged to lead. They are conducting their mission with an eager boldness that will ensure America remains the best in the world at space, and we look forward to your questions. Thank you for the opportunity.

The CHAIRMAN. Thank you all very much.

I have, I will say, many, many questions, but I will narrow it down to one because I have had the opportunity to speak with you before. This part of the discussion on the budget about, in the nuclear area, General Goldfein, the NNSA [National Nuclear Security Administration] budget was roughly \$17.5 billion. There was concern about that, and at the last minute, there was \$2.5 billion put back in and taken away from some other things, and those some other things are not happy about it.

But for the moment, focusing on that \$2.5 billion, can you explain to us, what it is, how important it is to the overall nuclear enterprise, and if it is important, why the President's original budget didn't have it in it?

General GOLDFEIN. Sir, as you know, there is a balance between NNSA that gives us the actual warheads and then the Department of Defense.

The CHAIRMAN. Understood.

General GOLDFEIN. And it is always a balancing act between the two. And as I understand, at endgame, when they took a look at the investment that we required to get the warheads we need, bal-

anced with the investment we are making in the enterprise for the bomb bodies delivery mechanisms, that the Department made a decision at the OSD [Office of the Secretary of Defense] level to put money in the NNSA account. So that is about as much detail as I understand on that.

The CHAIRMAN. Okay. Well, you are putting together the nuclear enterprise here. So you got the \$2.5 billion, you don't got the \$2.5 billion. How does that affect your ability to get our nuclear forces where you think they need to be?

General GOLDFEIN. Sir, right now, the impact has been minimal on the Air Force based on the fact that what you will see in our budget is fully funded for our nuclear programs. So we were able to put the money that is required for the B-21, the Long-Range Standoff, and the Ground-Based Strategic Deterrent, those are fully funded in our program. So the 2.5 actually didn't have an impact on the Air Force.

The CHAIRMAN. Well, no, I understand that. I am speaking to you as the person who is—and I also understand that NNSA is in charge of, you know, giving you the material you need to put into all these things.

General GOLDFEIN. Yes, sir.

The CHAIRMAN. But you are kind of overseeing to make sure that you don't just have a B-21, you actually have the nuclear missiles in it—

General GOLDFEIN. Right.

The CHAIRMAN [continuing]. To make it useful. So you don't have an opinion on that \$2.5 billion fight?

General GOLDFEIN. Sir, I don't. Only because it was happening at a much higher level. You know, what we brought forward was a fully funded program for all of the portions that the Air Force is responsible for.

The CHAIRMAN. Understood.

General GOLDFEIN. One of the areas that is very similar to what you are describing is nuclear command and control, and making sure that our portion, which is about 75 percent of what all comes together—and maybe Chief Raymond may pitch in here, because so much of what we do in nuclear command and control is actually done from space. But we also needed to make sure that that portion was fully funded.

The CHAIRMAN. Understood. I will—that is all I have. I will yield to Mr. Thornberry.

Mr. THORNBERRY. General Goldfein, you were describing what is required to keep the Air Force moving forward in a flat budget. I would respectfully add one more thing to your list, and that is, get your money on time. Because you can do more if you have got a whole year to plan versus some of the other alternatives. And that makes a difference too.

Let me pick up on kind of—part of where the chairman was going. So the Air Force is responsible for two legs of the triad, plus a large part of nuclear command and control. There are some people who suggest, well, it is not that big a deal if we can delay replacement of the land-based leg of the triad, or, you know, maybe manned bombers are a thing of the past. Can you just briefly describe your view on where we are with those programs that are

under the Air Force's responsibility and how much slack there is or is not in the schedule and funding for them.

General GOLDFEIN. Yes, sir. Unfortunately, we have actually delayed this recapitalization point where we really don't have any slop left in the schedule. The ground bases—you know, the Minuteman missile is 44 years old. We are getting to a point where there is time components in that missile that you actually no longer have vendors that can produce those, so—and we are, quite frankly, we are behind our adversaries in many ways. Russia has actually completed its triad recapitalization, and we are actually just getting started in ours.

So we really have not allowed any slop in the system right now for us to be able to go forward and do anything but recapitalize all three legs.

And I would just finish on saying that the Nuclear Posture Review that we all went through reconfirmed the need for all three legs of the triad. And I think Admiral Richard confirmed that as well in his testimony early last week.

Mr. THORNBERRY. Okay. General Raymond, one of the questions involving Space Force is, who is responsible for space acquisition? And I know there is a bit of a tussle maybe—or I understand there may be a bit of a tussle going on in the Department and so forth. Can you just give us a few comments on space acquisition, who decides, and how you see that going forward?

General RAYMOND. That is a great question. I think one of the benefits of standing up a Space Force, near-term benefits, will be to bring some unity of effort across the Department towards that end.

One of the homework assignments that was in the NDAA was for us to come back to Congress with a process for how we wanted to do acquisition. We are going through that right now. In my opinion, I think there is a way to do this to, one, keep the speed up, because we have to move fast. Two, unite efforts across a group of folks that do this, towards a common architecture so that we are all growing in the same direction, and reduce duplication.

I am excited for the prospects, and I think you expect the Space Force to deliver that to you, and we are working that hard. We have already got the team putting that together. I am going to see the draft of that this next week, and it will be coming to meet the timelines that Congress laid out.

Mr. THORNBERRY. Thank you.

The CHAIRMAN. Mr. Larsen.

Mr. LARSEN. Thank you, Mr. Chairman.

General Goldfein, I am also the chair of the Aviation Subcommittee, and so we deal a lot with pilots and pilot shortages, and so I wanted to ask you about how the U.S. Air Force is thinking about pilot shortages. And as well, maybe the bow wave, the idea of the recapitalization and the kind of platforms we might be flying and where that—where the numbers of seats and the number of rear ends in the seats meets the number of platforms that actually need them versus the transition to unmanned.

General GOLDFEIN. Now, thanks, sir, and thanks for your leadership on this. You know, we said from the beginning, this is a national-level issue, not an Air Force-level issue. The Nation actually

is not producing enough pilots to service military, commercial, and business aviation. From the military standpoint, as the airlines continue to hire in large numbers, we are about holding our own, I would describe right now, in terms of our pilot shortage. We are about 2,000 short. We have been about 2,000 short. That is against a denominator of about a 21,000-pilot requirement across the Air Force. We are starting to see positive trends in terms of retention, but it is too early to declare any kind of victory.

Congress has been very helpful with the authorization you have given us for bonuses, but I will tell you that most pilots are not truly motivated by money. It is very important to them, but they are motivated by quality of service. And everything we are doing as an Air Force is ensuring that flying in the United States Air Force is as rich an experience as we can make it. And we are making that rich at the squadron level. So I am seeing positive trends, but right now, we are sort of holding our own.

Mr. LARSEN. Okay. So a couple of things that your Air Force is doing, one is on using AI [artificial intelligence] and predictive maintenance to save costs and then the digital design technology application of that to the T-7. But in your testimony, especially on the T-7, you talked about how it is saving money. So given that you have had—you found \$21 billion in savings to reinvest, for those two examples, would we find that in the budget, where the money has been saved and has been put back into something else, whether it is because of the application of a new design, a manufacturing process, or because of the money you saved on predictive maintenance?

General GOLDFEIN. Sir, in a flat budget with less spending power, you are not going to see that money—as much of that money in terms of increased investment. What you are going to see that is filling the holes we have in weapon system sustainment.

So you talked about two areas, one which is, how do you use artificial intelligence when it comes to predictive maintenance. We have three weapons systems now that we are taking commercial best practices, C-5 as an example, and using predictive maintenance to make sure that we decrease the amount of time in depots, be more predictive about when we need to put them in depot, and we are actually saving a lot of time and a significant amount of money, we are reflowing that back into weapon system sustainment to drive our readiness rates up.

On the T-7, here is, to me, the most exciting thing about the T-7 when I went out and took a look at it. They engineered this aircraft through digital design, which is different than digital manufacturing. They actually designed it through digital means so that they were able to marry a fuselage with the wing in some number of hours with like four people. That is unheard of in the business of aircraft manufacture. So not only are we designing things well, we are building them more effectively and more efficiently. That is going to result in savings.

Mr. LARSEN. Okay. General Raymond, I had a question for you too, but why don't I ask you this, and then you can—and with the time left, I will be quick. But the question for you is about space professionals. And given your standing up the Space Force, how

many folks you are moving over, but where are your gaps in people that you need to develop to fill in those gaps?

General RAYMOND. We have—so, today, there is one person in the United States Space Force. That is me. And so—

Mr. LARSEN. You are doing a great job.

General RAYMOND. There is plenty—

Mr. LARSEN. Or he or she is doing a great job, whoever that is.

General RAYMOND. In a couple weeks, we are going to swear in No. 2, and that is Chief Master Sergeant Roger Toberman. There is incredible interest in this. This May, we are going to direct-commission just shy of 65 cadets from the Air Force Academy directly commissioned into the United States Space Force. We just advertised 40 positions, civilian positions, for the staff at the Pentagon. We had over 5,000 applicants for those 40 positions.

There is an excitement about space in every single sector. And so where we are focusing on is not the support part. We are going to rely for about 80 percent of our—of that work all is going to be relied upon on the Air Force. What we are doing is building a mission-focused space expertise with some related engineering, data, software, cyber, that will be necessary to fight and win this fight going forward.

Mr. LARSEN. All right. And I will come back to you later on a tech question. Thank you.

The CHAIRMAN. Thank you.

Mr. Turner.

Mr. TURNER. Thank you, Mr. Chairman.

I just want to clarify a few comments by the chairman with respect to the NNSA budget. There really is only—and I agree with the chairman on the need for clarification for the NNSA budget so that we have kind of a debate and, hopefully, a clarity on the efficiency and effectiveness of what we are spending there. We just had a hearing in the Strategic Forces Subcommittee yesterday where the Administrator, Lisa Gordon-Hagerty, testified.

The only original budget of the President's budget is the President's budget. There are always documents that are floating around of requests for different levels. NNSA's original request by the Administrator was for the 19-plus 7—I think 19.7, that actually has moved forward in the President's budget. I know the President was always in support of that full amount. So we would always hope that as the President puts his budget together, that there is full discussion as to increase or decreases.

But, General Goldfein, I want to thank you for your service. I want to thank you for everything that you got us through, sequestration, the difficulties of the effects upon readiness, and seeing the advances that our adversaries have made in both missiles and fighters and cyber and unmanned aerial systems, and the need to then fashion a force that can face that in the future.

I do want to go back to the chairman's issue on the NNSA budget. I know that you are not in charge of that budget. NNSA is under DOE [Department of Energy], not DOD [Department of Defense], so you wouldn't have been part of putting that together. I can understand your reticence there of wanting to comment on the elements in their budget. However, Admiral Richard from USSTRATCOM [U.S. Strategic Command], commander, testified re-

cently before us that failure to undertake the NNSA's modernization plan would be the effect of unilateral disarmament.

General Goldfein, you know what the condition is of our nuclear forces and what we are facing. Do you agree with Admiral Richard?

General GOLDFEIN. Sir, I do.

Mr. TURNER. Okay. Excellent.

Madam Secretary, as we go forward with Space Force, I agree with the chairman, we have to make certain that what we are doing is effective and efficient, that we don't just build new bureaucracies, that we don't duplicate things.

Secretary of Defense Esper was in front of us, and I raised the issue of NASIC [National Air and Space Intelligence Center] with him. And General Raymond was before the Strategic Forces Subcommittee, and I raised NASIC again with General Raymond.

As you know, the National Air and Space Intelligence Center actively works to bring together intelligence, both from our space assets and looking at the threats that we face in the air and the space. Secretary Esper has been to NASIC. I just spoke before the McAleese Defense Program Conference, and my first question was about NASIC, and it wasn't from someone from Ohio, and it wasn't from someone from Dayton. So even though this is a parochial issue, it is, I believe, an operational issue for the Air Force.

Secretary Esper said that we do not want to, as we look to creating assets that are dedicated to the Space Force, break anything that works, duplicate existing missions, or—and we, of course, want to avoid unnecessary redundancies. When you look to the issue of a National Space Intelligence Center, I would like if you would comment, because there are a number of people throughout the Air Force enterprise that are as excited as General Raymond said about joining the Space Force and making sure that it is successful, but at the same time, don't want the things that we currently have broken or diminished. If you could speak about that for those who are serving at NASIC, I think it would be very beneficial for them. Madam Secretary.

Secretary BARRETT. Representative Turner, the NASIC is a national treasure. What it provides is very important to the entire Department of the Air Force. And with the support of the Secretary of Defense and the intelligence community, we would intend to continue and to count upon, rely upon, and not break the expertise that is found at NASIC.

Mr. TURNER. Thank you, Secretary Barrett.

General Goldfein, we are all concerned about pilots and the pilot shortage. In looking to the fiscal year 2021 request, there are a number of people who are concerned obviously that it looks like you are decreasing the number of new pilots that would be in the process through funding. Could you explain that to us and give us some insights there?

General GOLDFEIN. Sir, actually, we have gone from about a little over 1,100 pilots that we produced in 2016 to about 1,300 in 2017. We are on track to produce 1,480, that is our target. And we think if we can get 1,480 a year, we are on track to doing that in 2024 and no later than, then we will be able to keep a steady state of what we need to be able to fly.

Part of what is going on with the reduced numbers is a combination of grounding. This last year we had some issues, as you remember, with the T-6 and the oxygen system, and so we lost a number of sorties that we are not going to be able to make up. So the numbers, we didn't hit our goal last year.

So now what we are doing is trying to look at a combination of Pilot Training Next, which is using new technology to train in a different way but to the same or higher standard, to be able to shorten the course length and increase more pilots. When I went through—

The CHAIRMAN. And I am sorry, if you could wrap up that point, the gentleman is over time. Want to get to the other members, but I don't want to interrupt you if you could just wrap up.

General GOLDFEIN. If there is time later, I can talk about Pilot Training Next. We are using new technology to train differently.

Mr. TURNER. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Mr. Garamendi.

Mr. GARAMENDI. General Goldfein, thank you for all the years. It has been a pleasure working with you, and I am sure all of us will miss your competent work.

Several things are on my mind. Just keep in mind that there is an \$8 billion reserve account in the NNSA that apparently is to be used some day somehow. So what is another \$2 billion for? Good question. We should ask that question. Which brings me to an accounting issue. So you are moving money back and forth within the Air Force accounts, weapons sustainment, money moving here from flight time, and around OCO money moving—I am not going to get into it, but I am asking my staff to get into the details of your accounting system so that we can understand where the money is and for what its purpose is. So not here, it is far too much detail.

General Raymond, with regard to the Space Force, good. Eventually, you will have a—the entire force in hand. I would ask you to keep in mind the role that the National Guard currently plays in space, not only in California at Beale Air Force Base, which is significant, how you move that in is going to be extremely important to maintain the capabilities that you presently have. I would urge you not to break it up. Bring it in in whole, and we can go into that in detail, as I did yesterday at the hearing.

The F-35. Two things about the F-35. One, the ALIS [Autonomic Logistics Information System] system, I guess we can solve that problem by giving it a new name. Probably not. Although that seems to be what would be happening here. Heads up, we are not going to back off on this. The spurs are on, and we are going to ride hard until we get this resolved. It is a readiness issue. It is also an issue for my colleague over here, Mr. Norcross.

Quick comment on it, Secretary Barrett, Goldfein, either the two of you or both, can I count on you getting this resolved?

Secretary BARRETT. The F-35 is of urgent importance to us. We are counting on—

Mr. GARAMENDI. How will you get it resolved?

Secretary BARRETT. And I will ask the hief to address that.

General GOLDFEIN. So I sat down with the CEO [chief executive officer]—all the CEOs and told them point blank, I am going to get

a question in Congress, and the question is, why are you buying—why should we buy you more F-35s when you can't sustain the ones you have and they are too expensive to fly. And I said, I have got to have a better answer to that question. They got on it.

I went down to Lockheed, I spent an entire day with them. ALIS to ODIN [Operational Data Integrated Network] is not just a name change. We are involved in the requirements for that system. Our Kessel Run software designers and developers are deeply involved in this, and we are having a far more mature discussion about data that we need to have. But, sir, we need this committee to keep its boot on the throat of this program, along with us, to make sure that we drive these costs down. Because right now, it is not affordable.

Here is the good news. I have seen more movement on this in the program in the last 6 months than I have seen in the last 2 years.

Mr. GARAMENDI. Well, I think Lockheed Martin is here in the audience, and they know that they are in deep trouble, and so are you. This has to be resolved. It cannot continue on, and, yes, ALIS is only one piece of the problem. There are the depots, and this cuts across all the departments, and it is a problem for each and every department. We will start, since you are here—heads up, we will get into it in detail offline, but know that this is a major, major concern.

You are moving into this joint-domain issue in a very big way. You have moved a lot of assets out of the—what I would call readiness, that is here and now, at least for the next decade, moving those assets over to the 2030 period of time, when most of this will come online. There are significant concerns: KC-10s, KC-35s disappearing. Really? TRANSCOM [U.S. Transportation Command] says, well, maybe not a good idea. Could you please comment on this issue? And I understand you are rethinking this part of the budget.

General GOLDFEIN. Sir, this is the common tension that you will always see between a combatant commander that has a near-term requirement and a service chief that is building a force to win in 2030. And so we could have the same discussion about tankers, fighters, bombers, command and control, ISR [intelligence, surveillance, and reconnaissance].

So in the tanker business, two options, two that I want to tell you. First of all, if we go to war into a high-end fight, in terms of mitigation, we have already told the combatant command and the Secretary of Defense that we would put every KC-46 into a high-end fight.

Mr. GARAMENDI. Even though it doesn't work?

General GOLDFEIN. We would not use it for day-to-day operations, but we would use it for high-end combat operations. What we are asking for is a 3 percent retirement, representing 3 percent of the KC-135 fleet. And so we are working through that with the Secretary of Defense now, but it is a reasonable trade.

The CHAIRMAN. Thank you.

Mr. GARAMENDI. I understand you have a 25 percent failure rate on the—

The CHAIRMAN. Actually, if I could ask this question. The comment under his breath there that I think you missed was the notion that the KC-46 fundamentally doesn't work. I think that is actually an important question to address before we move on. Does it have problems or does it fundamentally not work?

General GOLDFEIN. Sir, we are having significant issues with the remote visual system. It is a hardware problem that requires a hardware fix. I sent a letter to the CEO, Mr. Calhoun. He came to see me 3 days later. We sat down, he committed to me that this is his number one priority for getting this back on track. I have seen a different behavior from that company since he has taken over. We are on final. So I want to be careful about negotiations, but we should have a good fix.

The CHAIRMAN. Of the many issues in your portfolio, getting a clear picture as to how we get the KC-46 to actually function like it is supposed to is a pretty big one. So we will definitely—I know Mr. Norcross will definitely be following up with you on that as well.

Mr. Lamborn.

Mr. LAMBORN. Thank you, Mr. Chairman.

I want to thank all three of you for your contribution to our national defense, and, General Goldfein, you will be missed.

My first question is for Secretary Barrett and General Raymond. It has been a pleasure working with both of you throughout the standup of Space Command and the creation of Space Force. As you know already, I believe that Colorado Springs is the best option for that permanent location—we have had this conversation a time or two, actually more than that—based on many factors, ranging from location, civilian and military workforce, existing infrastructure and capabilities, and quality of life for service members and their families. But I am not going to go into that today.

When it comes, though, to the Guard and Reserve personnel, one of the four space wings which are in Colorado is an Air Reserve Component of the Air Force. And there are also 630 National Guardsmen conducting space missions in our State. The synergy that we see between Active Duty and Reserve Component in space operations multiplies the capacity of the force, saves money, and retains talent.

Now, I am aware that there is a proposal to continue to study the role of the Reserve Component as it relates to the Space Force, but I believe this delay would create a gap in continuity for the space operators currently in the National Guard and jeopardizes the readiness of these unit-trained and equipped formations.

So my question on this, is there anything holding back the establishment of a Space National Guard in this coming year?

Secretary BARRETT. We were very much—we cannot go to war, we cannot do our jobs without the Guard and Reserve. They are very much valued partners in the process. The Space Guard and Reserve, we are going to spend a little time looking at to incorporate that workforce in a way that we might be building a new design, a new paradigm for how that is done. The chief has given a great deal of thought to it, and I would invite his comments.

General RAYMOND. Congressman, I agree with everything you said. We are reliant on the Guard and Reserve today; the 310th

Space Wing at Schriever, the wing you were talking about, there is about 1,400 guardsmen between the Army and the Air Force that provide space capabilities as well. We rely on them today, and we are going to need that in the future.

We have been directed by law to do a review of this, and so we are going to follow the law. The National Defense Authorization Act of 2020 tells us to do this review. We are going to do this review. We have an opportunity to look at how would we do this, and are there more efficient ways to do it for a service that is going to be about 16,000 people that is custom built for this domain. So we are going to do that. We will meet the requirements of the law, but I will assure you that there is going to be no lapse in capability that is provided today. The Guard and Reserve can fully support what we are doing today, as they are today, and we are going to move out diligently with speed to answer Congress with the direction that we were given in law.

Mr. LAMBORN. Okay. Thank you both for that answer.

And, General Raymond, as best as you can in an open setting, can you share with us some of the characteristics a permanent national security space command and control center needs to have to successfully fight and win wars that extend into space?

General RAYMOND. We have two really successful C2 [command and control] centers today. One is in Schriever Air Force Base, the National Space Defense Center. One is at Colorado Springs. You have to have the ability to ingest data. You have to have the right expertise. You have to have relationships and connections with our allied partners. You have to be able to communicate broadly with all those that you have to communicate with, including those that are forward in theater. Those are some top-level items that I would put at the top of the list.

Mr. LAMBORN. Okay, thank you.

And then my last question, General Raymond, I know you had a space warfighting doctrine conference at Peterson Air Force Base in January to coordinate and move forward with writing the document that will dictate how our joint force will fight wars that extend into space. And I believe it is accurate to say that your work, that product, will be used to determine the finalized force organization and equipment requirements for our space warfighters.

So where are we at? What is the status report on writing the Department of Defense's space warfighting doctrine, and when do you think this will be finished, and how is it coming along?

General RAYMOND. Thank you for the question. We have had space doctrine before. It is doctrine that was built largely for a benign domain. That is not good enough today. And if—on 20 December, when the U.S. Space Force was stood up, one of the fundamental things, in my opinion, that an independent service has to do, it has got to develop its own people and it has to develop its own doctrine. And so we pulled the team together. We put a first draft of a—what we call a capstone document. That will continue to get further reviewed here over the next couple of months, and then we look forward to publishing that.

And then there will be several series, levels of doctrine, including joint doctrine in my U.S. Space Command hat, that we will also follow.

Mr. LAMBORN. Okay, thank you so much. I appreciate your service.

Mr. Chairman, I yield back.

Mr. LARSEN [presiding]. Thank you, Representative Lamborn.

The chair now recognizes Representative Norcross for 5 minutes.

Mr. NORCROSS. Thank you.

First of all, General Goldfein, thank you so much for your service over the years, and we particularly appreciate your frankness when you address so many of our tough questions. But I want to follow up on the question of the KC-46s.

Mr. LARSEN. Representative Norcross, can you pull the microphone really close to your mouth? Thanks a lot.

Mr. NORCROSS. The KC-46s. We are retiring some of the 135s at a little bit more of an accelerated pace than we expected, along with KC-10s. But as said, and you mentioned it earlier, in a high-end fight, we could use the 46s. Describe to us what a high-end fight looks like.

General GOLDFEIN. Sir, if we would go to a high-end contingency fight, either a peer fight or one where the Secretary of Defense asked me whether in high-end combat operations, whether I would be comfortable using the KC-46, I would take that risk. We have already done the operational analysis, and we would do that. We will not take that risk during day-to-day operations, and it has to do, quite frankly, with the remote visual system that very quickly the last 10 feet, when the boom operator is trying to plug the receiver, the system was not designed well in terms of that final focus. So we are having more out of, you know, contacts around the airplane.

I would take that risk in combat. I would not take that risk in day-to-day operations.

Mr. NORCROSS. That describes it. The stiffness of the boom is only with the A-10, which may or may not be part of that.

Just want to switch over to the modernization, talking about the ISR. There is not a combatant commander that we have a discussion with, there is virtually nobody we deal with, day to day, who doesn't need more. Yet it appears that we are going to cut this high and dry, and particularly notable is the Global Hawk, Block 20 and 30. Would you walk us through that decisionmaking? Because it appears we are going to have a real lull here.

General GOLDFEIN. Yes, sir. There is no better example I can give you of how when we connect sensors and shooters and weapons together in a networked approach, we actually bring up capability and capacity because we are taking use—making use of those that are not connected today. So what I can't describe for you in an open hearing, and I would love to do in a closed session, is where we are going on the classified side in terms of bringing survivable capability together that offsets some of what we are trying to take down in the—in those that are not survivable.

But when you tie them together, and you get the sensors actually comparing and fusing information, you actually increased your capacity of ISR.

Mr. NORCROSS. We understand. We were just out at Palmdale to see some of what we are doing. But for that 4-year period, there is what they are calling a bathtub effect as we are going down to

zero, in producing those new ones. What you just described to us is going to take the place of those new planes that we would have instead of those?

General GOLDFEIN. Not one for one, but there is absolutely a replacement there. But there is also a factor that we have to think about which is, you know, everything we produce in all the services, is a standalone operating computer and sensor. And when we can tie those computers—think about, you know, anything that rolls, submerges, floats, flies, or orbits is a sensor. When we can actually fuse and make use of that information and not do it independently, you actually get a much better picture with greater fidelity earlier in the fight than if you just operate on a standalone basis. And that is why, as we move from platforms to networks, we actually increase our capability.

Mr. NORCROSS. So we would expect to hear from our combatant commanders that their view is going to change in asking for this, so that will be a cultural change we will have to deal with.

For my remaining time, I yield to Mr. Crow.

Mr. CROW. Thank you, Mr. Norcross.

Thank you to all of you for your testimony today.

Secretary Barrett and General Raymond, I have appreciated your discussions on Space Force. As you know, I represent Buckley Air Force Base in Aurora, which is about to become Buckley Space Base next month. Could you provide a quick update for us on the timing of the basing discussion for U.S. Space Command and the criteria being used? And I affiliate with Mr. Lamborn's comments on the importance of Colorado. Of course, I think Buckley is just slightly better than Colorado Springs on the basing.

Secretary BARRETT. Well, we are all very excited about the future there. With the standup of the Space Force, much of what had been operating in Colorado is moving to Washington—or there will be some that will move to Washington. As we redesign that system, we are going to reopen the process and put forward criteria in detail and invite all who think they have a good shot at it to come and represent their communities for that possible basing.

Mr. CROW. And when will that reopening occur?

Secretary BARRETT. That will be—this spring it will be announced.

Mr. CROW. Thank you.

Secretary BARRETT. So the chief may have further to add.

The CHAIRMAN [presiding]. Thank you. Actually, we are out of time at the moment.

So, Mr. Wilson.

Mr. WILSON. Thank you, Mr. Chairman.

I thank each of you for being here today, and I especially appreciate your service. I am the son of—he was a—he is a late veteran of the 14th Air Force. He cherished his service with the people of India and China, and that was always meaningful to me. And then growing up in the “Holy City” of Charleston, South Carolina, we appreciate the Charleston Air Force Base and the capabilities, the C-17s, everything there.

Additionally, I am the grateful uncle of a member of the Air Force, a Citadel graduate, so obviously a very bright fellow. So thank you for being here.

And, Secretary Barrett, F-35 aircraft provide peace through strength. There are 11 companies in South Carolina who provide the equipment for the F-35. We are grateful that the Marine Corps Air Station Beaufort is home to F-35 pilot training and will eventually have up to 90 F-35B aircraft, and the people of Beaufort County love the sound of freedom. We would gladly welcome also F-35s at McEntire Joint Air Base and Shaw Air Force Base.

The Air Force 2021 unfunded priority list requests an additional 12 F-35s. And, Madam Secretary, fifth-generation striker—strike aircraft capability is a top priority of the Air Force. What can be done to promote 60 F-35As in your budget?

Secretary BARRETT. Mr. Wilson, we would be delighted to have those additional aircraft, of course, but we have to live within the budget proposal put forward, and we, of course, will comply beyond that. And I would invite the chief to add to that.

General GOLDFEIN. Sir, we ended the last discussion of the F-35 on a bit of a negative tone talking about sustainment. I think it is important for me also to tell you on the record what I think of it operationally. It is performing brilliantly. My fellow air chief, the Israeli air chief, called me and said, hey, Dave, he goes, you know, I am not integrating the F-35 into the Israeli Air Force. I am integrating the Israeli Air Force into the F-35. I can't give you a better statement of what fifth gen is all about. This one is a game changer. It is brilliant in its performance operationally. We have just got to work on the sustainment piece.

Mr. WILSON. And, General, thank you so much for pointing that out. And, indeed, to work with our ally Israel and provide peace through strength, you are doing that, so thank you.

And, General Goldfein, South Carolina is pleased to have the 20th Fighter Wing at Shaw Air Force Base and the 169th Fighter Wing at McEntire Joint Air Base. We know that the Air Force has had success in growing its size of the maintenance community, although not at the desired 80 percent mark. I am thankful the F-16 mission-capable rates are improving.

What is the plan and timeline to improve the mission readiness for F-16s to meet or surpass the 80 percent goal?

General GOLDFEIN. Well, with the support of this committee, sir, and the money that we have had since 2018—we were in a downward spiral—we have been able to get upwards of 13 percent overall readiness rates and 34 percent improvement in our pacing units. The pacing units are those units we have identified that will go first into a China or Russia fight, and so we have been able to improve now just in that short period of time.

The F-16 is on that track, but I will tell you that we have got some significant modifications that we are doing that are going to require us to put the F-16s through depot. And that is going to lower our overall mission-capable rate, but we mitigate that as we get it back out of depot at a higher level of capability.

Mr. WILSON. Thank you very much, General.

And, General Raymond, again, you are a person of history now to be the first person to be the leader of space operations. Congratulations.

One of the major focuses of Space Force is ensuring that space systems can be developed and acquired at the speed of innovation.

What a challenge. What are your perspectives on how to fix the system space unique acquisition challenges?

General RAYMOND. Thanks for that question. I think it is one of the fundamental tenets of the National Defense Authorization Act, the reason for the Space Force. I think we have to go at speed. Our adversaries are going fast, and we need to go faster. I think it begins with requirements. You have to streamline requirements. I think it begins with having an architecture that everybody agrees to, and that is why when the law said that the Space Force will be responsible for the architectures of—the national security space architectures, I think that is really important, to get everybody rowing in the same direction.

I think software, to go back to Mr. Larsen's question, we are already designing how we want to do software in this force to be able to go fast, to get—be more software-based rather than hardware-based.

Mr. WILSON. And America is grateful for each of your service. Thank you so much for what you do protecting American families. I yield back.

The CHAIRMAN. Thank you.

Mr. Gallego.

Mr. GALLEGO. Thank you, Mr. Chairman.

Secretary Barrett, what are your thoughts about the right mix of fifth-generation and fourth-generation aircraft?

Secretary BARRETT. Well, we are going to do well to have the observability that fifth generation allows, but there is a good role also for the fourth generation. And we are going to continue to see that as a balance and as a correct mix. I would invite the Chief of Air Force to add to that.

General GOLDFEIN. Sir, right now, we are about 20/40. We think by about 2030, we will be right in the 50/50. About the 2040 timeframe, we are projected to be about 60/40. That is about the right target, I think, going forward.

Mr. GALLEGO. So you would say a good mix, then?

General GOLDFEIN. A good mix. And I will tell you, at some point in the future, we are going to be talking about the same thing in a fifth-/sixth-gen mix.

Mr. GALLEGO. And, sir, I agree with that. So it is kind of concerning what you guys just said. If we need proven capable aircraft, why is the Air Force announcing they intend to retire 44 A-10 Warthogs without giving us more details?

General GOLDFEIN. The A-10 story, I will tell you that, as I said yesterday, and the witness asked, you know, Senator McSally and many others have done a great job really saving the A-10. So the A-10 is going to fly well to the 2030s. We are putting almost a billion dollars into the A-10, updating its wings, updating its avionics, updating its radios. There is no better platform for close air support, and we are going to keep that into the 2030s.

Mr. GALLEGO. I get what you are saying, General, so that is why I am confused. So why is it—why are we planning to retire them if we are putting this much investment in them?

General GOLDFEIN. Because we are fleet managing, sir, across the fleet. KC-135s, KC-10s, Global Hawks, A-10s, right. We are talking the oldest airframes that are unaffordable to keep flying

and then putting that money and that manpower back in the existing system and buying new technology.

Mr. GALLEG0. But I also just wanted to point out that we have been very clear, as in Congress, specifically the House Armed Services Committee, through the 2017 NDAA, that there is not to be any reduction of the A-10 until there is a study between the F-35 and the A-10. And that study is coming out when?

General GOLDFEIN. Sir, that study is complete. I have talked to the director of OT&E [Operational Test and Evaluation]. It is actually—he is prepared to offer that as an interim report, but he is right now planning on delivering that in September with the full IOT&E [Initial Operational Test and Evaluation] report on the F-35.

Mr. GALLEG0. But the 2017 NDAA says that you do not do any movement, any decision on the A-10 until you come and deliver that report. Right now, you have made a decision without delivering us the report, so in my opinion you are in violation of the 2017 NDAA. Is that not—what else should I take from that?

General GOLDFEIN. Well, sir, we had this discussion yesterday as well with the SASC [Senate Armed Services Committee]. You know, when we look through it and look at the language, given that we were going to give you the report on the first month of the fiscal year, and the timing that was laid out in the law, there is actual time within—between the end of the FYDP to conclude this. But I will tell you, we understand the law, and we will follow it.

Mr. GALLEG0. Okay. Now, I understand that there has been a change in the plan from the first initiation—or the first release of the plan and yesterday when you were talking on the Senate side that you guys have a new plan for the A-10. So what is the details of this new plan?

General GOLDFEIN. Sir, the only plan we have right now is the one that is in the President's budget. I would be happy to get with you offline about this dialogue that we are having.

Mr. GALLEG0. Good.

I do want to say for the record, Mr. Chairman, that this is very, very discouraging, though, and also just to my fellow witnesses in front, that we are moving in this direction after we have been very clear as Congress, as the Armed Services Committee. Certainly in a bipartisan manner, I have been in support of the A-10 Warthog when I was—when the Obama administration tried to get rid of it. I have been here, you know, fighting when the Trump administration wants to get rid of it, not just because it is based in Arizona, because I do think it is a capable fighting platform, and it basically saved my ass in Operation Matador in Al Qaim, you know. And as much as I love the F-35, I don't want to be using a billion-dollar platform to support infantrymen. That is not smart, and it is just not a smart use of our money.

And going into the future, the Air Force may only want to fight in the air or in the space domain, but no matter what, there will always be infantrymen, and they will also need close air combat support. But whatever platforms are out there right now, the best one, the cheapest one, the strongest one, certainly if something ever happens, especially in Russia—I am sorry, with Russia going into—surging into the Eastern European theater is still the A-10.

So I will make sure—I look forward to that report, but I think we need to be very, very clear that this Congress, the Senate, has said that until we see something that is a better replacement for the A-10, that the A-10 is not going anywhere.

Thank you. I yield back my time.

General GOLDFEIN. Sir, can I have 1 minute?

Mr. GALLEGO. Yes.

The CHAIRMAN. Quickly, sir.

General GOLDFEIN. Sir, if I could just offer that, number one, we are going to put whatever we need to support soldiers, sailors, airmen, Marines on the ground, whatever it takes, regardless of the cost. You are looking at a guy who was shot down in combat, got up the next night, went in and flew, and I flew close air support. Let there be no mistake on the commitment of the United States Air Force. We fly to the sound of the guns, and we support everybody on the ground, or we die trying.

Mr. GALLEGO. Thank you.

The CHAIRMAN. Mr. Rogers.

Mr. ROGERS. Thank you, Mr. Chairman.

I am very pleased to see the Air Force here in its new structure. It is great for our Nation. I know this is your first NDAA, Secretary Barrett. You know I am a big fan of yours, and General Raymond knows how I feel.

But I want, for the record, to thank General Goldfein for his many years of service. He is an incredibly respected general officer, and he has done an admirable job. And on behalf of a thankful Nation, I want to say for the record, I appreciate you.

General Goldfein, the Space Force has begun a significant investment in OPIR [Overhead Persistent Infrared] architecture to replace SBIRS [Space-Based Infrared System]. Can you tell me what that is going to look like and if we are going to be able to meet the 2025 timetable?

General RAYMOND. I think you meant that for me.

Mr. ROGERS. Did I not say General Raymond?

General RAYMOND. Yeah. Okay.

Mr. ROGERS. I am sorry. I might not have.

General RAYMOND. This is a critical capability for our Nation. It provides the unblinking eye for detecting against missiles that are coming into our country. Interestingly, it is also the replacement for the system that provided warning to our troops in Iraq when Iran launched a missile.

Mr. ROGERS. What I am after is how is it going to look different than SBIRS?

General RAYMOND. Yeah. So what this program does, it is a more—and I can go into much more details in a closed hearing, but it is a more defensible capability than SBIRS. And when we made that trade a couple years ago to shift from SBIRS 7, 8, to next-generation OPIR, it was because of that defensibility. It includes a geo segment, a polar segment. It includes the ground architecture as well. And with the support of this committee, the 804 authorities that we had, we are, I think, 18 months—we got an 18-month head start on prototyping, and we just completed some hardware integration testing that was 4 years ahead of its predecessor SBIRS.

Mr. ROGERS. So you are confident we are going to make 2025?

General RAYMOND. I am confident we are going to make 2025, and we are fully funded with this funding to do that.

Mr. ROGERS. Okay. You recently signed out a fighting SATCOM [satellite communications] strategy.

General RAYMOND. That is right.

Mr. ROGERS. Tell me what that is.

General RAYMOND. Yes, sir, I will be happy to. It is really important. Our adversaries are developing capabilities or have capabilities that can jam satellite communications. We have to be able to fight in a contested domain. When you travel overseas and you turn your iPhone on, it links up to whatever network that you go to.

Last year's NDAA provided me the authority to do—procure commercial SATCOM, and we think there is a great opportunity here working with the commercial industry to bring commercial SATCOM and military SATCOM closer together and provide a resilient hybrid network that says if a warfighter is on this satellite and it gets jammed or loses contact for whatever reason, it can automatically switch over to another satellite, whether it is commercial or military, and that is the gist of that strategy.

Mr. ROGERS. Great.

General Goldfein, the Air Force recently realigned \$4.1 billion across the FYDP that, according to the Air Force budget documents, are being used to invest in four broad categories: connect the joint force, dominate space, generate combat power, and conduct logistics under attack. Would you please elaborate on the specific types of investments being made with this budget request and address the priority years—priority areas?

General GOLDFEIN. Yes, sir. And Chief Raymond can talk to the space piece. Let me just focus on the connecting the joint force. We are on path to do—every 4 months, we connect portions of the joint team that is not currently connected through the digital engineering and common data architecture, and then we solve problems.

So we are all going, all the Joint Chiefs, we are all headed to Nellis Air Force Base in April. And we have three supported commanders that we are going to produce all-domain options for them by connecting capabilities. This is going to be a live-fly exercise. We are going to have ships off the Gulf. We are going to have Marines at Yuma. We are going to have Army at White Sands Missile Range. We are going to be flying in Nellis, and we are going to do this Joint All-Domain Command and Control demonstration to pull this all together in a homeland defense scenario. We learn every time we do it.

A year ago, we were talking about this, and it was mostly aspirational lightning bolts on PowerPoint charts. There was not a lot behind it. Today, we are not talking about cloud architecture. We have one. We contracted it. It is up and operating, and all the services are connected to it. We are not talking about common data architecture. We actually have it up and running.

So what you are seeing is about \$2.5 billion that we put forward to connect this joint team. And I will end with, of all the things that we are doing, this has the most promise of producing a joint team that can win in 2030.

Mr. ROGERS. Thank you.

General RAYMOND. If I could pile on——

Mr. ROGERS. Certainly.

General RAYMOND [continuing]. To that for a few seconds as well. This is absolutely critical for space. We have to operate at great distances at speed, and the work that we have been doing in what we used to call Enterprise Space Battle Management C2 has lashed into that Joint All-Domain C2 and is providing a lot of the data architecture that it is using.

Mr. ROGERS. Great. I would just close by pointing out we are going to have a new seal on the wall.

General RAYMOND. Yes, sir. I will deliver it, and we will hang it together.

Mr. ROGERS. Thank you.

I yield back, Mr. Chairman.

The CHAIRMAN. Everybody seems to be concerned about that, and there is a balance issue, because we have three on one side, three on the other. So we are going to have to figure out the logistics of that.

Mr. Courtney.

Mr. COURTNEY. Thank you, Mr. Chairman.

And thank you to the witnesses. Again, it was a good opportunity to talk the other day, appreciate you coming by.

I know the issue of the remote visual system has been brought up by the other members. I am not going to belabor the point. I just want to again emphasize that as we get closer to markup in the Seapower and Projection Forces Subcommittee, you know, we have to make a decision about building more planes that we know are going to have to be fairly significantly retrofitted.

So to the extent that, you know, this comes to a conclusion in terms of what that retrofit looks like, frankly, it would, I think, just make for commonsense budgeting so that we know, you know, what we are paying for. And again, we had a good discussion on that, and I hope, again, just to, you know, see that dovetail as we get closer to the timeline for decisions here.

The other question I just want to touch on is the Air National Guard C-130s. The Connecticut Air Guard actually just returned from Afghanistan. They did eye-watering work in terms of just the tonnage and personnel that they transported in that part of the world. They are doing a good job. But, you know, another issue that we have had to kind of wrestle with on the subcommittee over the last 3 or 4 years is modernization of the C-130s, the propeller issue in particular. The Air Force had to ground, obviously, some C-130s back in 2019. The Navy had a catastrophe because of defective propellers.

A lot of us think that, you know, the NP2000 is a solution that just will, you know, eliminate, really, the safety issue that we know, you know, certainly had that impact with the Navy situation. Maybe just talk about that a little bit in terms of, you know, another decision that the subcommittee is going to have to wrestle with very soon.

General GOLDFEIN. Well, thanks, sir. And I echo your comments on the Guard. We couldn't fight—we couldn't fight without the Guard.

So particularly on the propeller, so we have replaced all the pre-1971 C-130H propellers with the NP2000, which I have been down to the depot, it is a great propeller. We have modified our depot and our maintenance procedures on the post-1971s to mitigate safety concerns, so we are not looking through the safety lens. I will tell you, though, we are in ongoing discussions on how, if there is more money, we could actually take that new propeller and make it more broad across the fleet. So again, thanks to your constituents who produced a great product.

Mr. COURTNEY. Well, again, we will look forward to continuing that conversation.

And with that, I yield back.

The CHAIRMAN. Mr. Gallagher.

Mr. GALLAGHER. Thank you, Mr. Chairman. Thank you all for being here.

General Goldfein, thank you for your service and your engagement with this committee. It has been very helpful, particularly for us younger members.

I was wondering, in 2018, we authorized, via the NDAA then, a series of studies on the Air Force's future aircraft inventory. One of those was conducted by CSBA [Center for Strategic and Budgetary Assessment], and we now have that report, a new CSBA report coming out of that requirement that found that, quote, the current CAF [combat air forces] predominantly consists of aging, non-stealth aircraft that are not suitable for operations in contested and highly contested threat environments. This force structure is largely the result of decisions to cancel or prematurely truncate CAF modernization initiatives to develop and procure new weapon systems for high-end operations against modern IADS [integrated air defense system] such as the F-22 and B-2 programs. In addition to program cost, the primary justification for these decisions was based on a belief that low-observable aircraft would not be needed in significant numbers to support contingency operations against regional aggressors like Iraq or North Korea. Although reasonable in the immediate aftermath of the Cold War, this assumption is no longer valid.

I know that is a mouthful, but do you agree with that CSBA assessment?

General GOLDFEIN. Sir, I would say that it is my recollection, having been—and many in this room perhaps were there when the decision was made to cancel and stop the F-22. At that time, the decision was made to reflow that money into accelerating the F-35. If we had just completed the program of record when that decision was made, we would have 1,000 F-35As on the ramp today. We didn't get there. So therefore, what we have is a fleet that has continued to age out as we have flown it downrange, but I would not align with any assessment that says that low observability is not critical for the future.

Mr. GALLAGHER. Well, what lessons would you then draw or suggest to future planners who may be tempted to cut modernization?

General GOLDFEIN. For sure, for the Air Force, I mean, we are privy, probably, you know, one of your more technical of services. So again, when you look into—and we can bring—I would love to sit down with each of you in the classified setting. When we bring

you what we are investing in in terms of modernization and the game-changing technology that we are bringing forward, you will see and understand why we are making the trades we are with some of the older legacy platforms. An Air Force that doesn't modernize doesn't win.

Mr. GALLAGHER. What do you say to those—I mean, you look at the geography of INDOPACOM [U.S. Indo-Pacific Command], which I think we would all agree is now the priority theater, if you follow the logic of the National Defense Strategy. The geography is challenging. The ranges are long, or there are questions about the A2/AD [anti-access/area denial] environment. There are questions about access to allied airfields as well.

What do you say to those who would suggest we should, given that geography, be emphasizing our B-21 program, for example, and seek to grow it and perhaps also correspondingly pull back on tactical aircraft procurement?

General GOLDFEIN. Sir, I jokingly tell my slide builders that if I see one more slide with a big red dome over China, I am going to execute choke con on the slide builder. China can't put a block of wood red dome over itself. It can put a block of Swiss cheese. And my job is to know where the hole is in and get in and hold targets at risk at the time and place of the Commander in Chief's choosing, and one of the weapons system that does that is the B-21.

Mr. GALLAGHER. Point being that, you know, A2/AD poses challenges, but it is not an impenetrable wall.

General GOLDFEIN. Never.

Mr. GALLAGHER. The Air Force has committed to standoff hypersonic weapons, but what are our plans for stand-in hypersonic weapons associated with the F-35A?

General GOLDFEIN. So you may know that we down-selected from two hypersonic programs to one.

Mr. GALLAGHER. This was ARRW [Air-launched Rapid Response Weapon] and—

General GOLDFEIN. HCSW [Hypersonic Conventional Strike Weapon].

Mr. GALLAGHER. HCSW, yeah.

General GOLDFEIN. And we did that based on the fact of a combination of funding. We had gotten a lot of benefit out of the competition while it went on. The more flexible of the two was the ARRW program, so now we are pushing for the full funding. But I will tell you that the service secretaries signed an agreement to ensure that we take the best of each service when it comes to hypersonic technology, under the leadership, quite frankly, of Dr. Mike Griffin, who is really steeped in this technologically, to make sure that the Army, the Navy, the Air Force, the Marine Corps, that we are all bringing our best technology in our labs forward and making this complementary as we go forward.

Mr. GALLAGHER. Appreciate that. I am running out of time so, General Raymond, all of my detailed questions about the future of Space Force uniforms will have to wait until the next hearing.

General RAYMOND. I will be happy to come by and see you too.

Mr. GALLAGHER. Appreciate that very much.

I yield.

The CHAIRMAN. Mr. Brown.

Mr. BROWN. Thank you. And thank you, Madam Secretary and Generals, for being here.

General Goldfein, I want to thank you for your service. Had the privilege of receiving testimony from you in this hearing, being in the presence of your presence at a variety of forums. And you are not only a fantastic leader but a real thought leader, and I hope that as you take off your uniform, you don't venture too far from the national security conversation that is happening in this country.

I am also very excited that your successor, who has been nominated by the President, I am confident will be confirmed by the Senate, General Charles Brown, the first African-American Chief of Staff not only for the Air Force but of any service component. So I am looking forward to working with him as we ensure that the United States has the air power necessary to counter our adversaries.

I wanted to talk about the shortfall in the number of pilots that impacts readiness but take a more narrow approach. In your joint statement, you say that the first resilient and ready airmen and space professionals are the bedrock of the Department's readiness and lethality. You have got a pilot shortfall, and you have got a problem. You are lacking diversity and inclusion among your aviators.

In April 3 of 1939, this Congress created and funded the program that today we know as the Tuskegee Airmen. There were a thousand pilots in that program. Granted, the core of pilots was much larger as we were gearing up for World War II, but it represented .5 percent, a small percentage of the pilots. Today, there are only 47 African Americans who fly fixed wing in the Air Force. That is 1.5 percent. And I don't have the numbers for women, but it is as disturbingly low.

I know that you are doing a number of things to address that, but the question is, what can we do 81 years later as a Congress to enable you to achieve the diversity, not just for the sake of the diversity, but to enable you and our Nation to meet the readiness needs and the challenges that are faced by a shortfall in the pilots that we have in uniform? Can you please address that for me?

Secretary BARRETT. Well, as a pilot and someone who worked ardently to get the 1948 law that prohibited women from flying fighters, to get that law changed in 1992 and the policies changed in 1993, it is a topic that matters a great deal to me. And as the Secretary who recommended C.Q. Brown's appointment, I feel strongly that we need to occupy the talent in whatever package that talent is presented.

I have been a friend of a number of Tuskegee Airmen over the decades and decades and was there when the President pinned on the General star on now General McGee, a Tuskegee Airman, who celebrated his 100th birthday not so long ago.

The first thing we have to do is recognize there is a problem, and the quantification of that problem is what the RAND report recently identified for us. And then I think one of the things that will help us is the recent attention brought to military service when the Space Force was stood up. There is a new excitement about being

a part of the military service. People want to be a part of the Air Force and Space Force as a result of that. I would invite my colleagues both to speak to it as well, or I welcome meeting with you further to discuss it.

Mr. BROWN. I will take that for the record. Because let me just point out that this is what the report found, and we cannot be afraid of this. We have to take it head on. It says that minorities and women—the report found that barriers to minorities and women included racist and sexist comments from simulation instructors, race and gender stereotyping, and a contending with the prevalent culture. This was based on focus groups from not only students but instructors and leaders. We have got a cultural problem in the Air Force, and I expressed this last week in the Navy. So I just implore you to take this on and ask Congress for your help.

[The information referred to can be found in the Appendix on page 83.]

Mr. BROWN. And in the last 20 seconds I have, let me make a pitch for this. I visited Dover Air Force Base. They are right next door to Delaware State University, an historically Black college and university. They have an aviation program there. Their ROTC [Reserve Officers' Training Corps] affiliation, unfortunately, is an hour drive away from Delaware State. Let's find flexibility to establish an ROTC unit right there at Delaware State University so they can team up with Dover and help address this need.

Thank you, Mr. Chairman. I yield back.

The CHAIRMAN. Mr. Bacon.

Mr. BACON. Thank you, Mr. Chairman.

I want to thank the Secretary of the Air Force. You are doing a great job stepping in. We applaud what you are doing.

Congratulations to General Raymond. You have come a long way since you and I inspected Hurlburt and Nellis Air Force Base as colonels, but congratulations.

General RAYMOND. You have come a long way, too.

Mr. BACON. Thank you.

And, General Goldfein, congratulations on a great job. I personally believe you will always be known as one of the greats in our Air Force, and I just want to applaud the great work you have done.

And, Secretary, I wanted to get your assessment. Do we have an appropriate budget that can field the B-21 and the GBSD [Ground-Based Strategic Deterrent] on time? Are we on track to do that?

Secretary BARRETT. We have budget to do that. We have to be ever vigilant to make sure that it continues and that we keep those productions going.

Mr. BACON. Thank you. I think fueling a triad and recapitalizing all three parts of that is priority number one. It would be my first top priority and I hope out of this committee.

Do we have a better name for GBSD? I mean, we have got to work on something. I have to practice this to get that acronym right.

Secretary BARRETT. We are in, I think, total agreement. It fails on the moniker test, but the mission is the right mission.

Mr. BACON. Okay. Thank you.

And both to our Chiefs here, you know, 3 years ago when I came in, our readiness level was—I think it was at emergency. I will just give you one example. In the Army, we have 58 combat brigades. Only three could deploy or fight tonight.

Could you both give me some evidence with 3 years of good budgets that we have turned this readiness level, at least point it the right way and making progress? General Goldfein.

General GOLDFEIN. Sir, I will just tell you that when we started the down—when we came out of the downward spiral in 2018 and really just stopped the bleeding, since that time, with your help, we have had a 13 percent increase in readiness and mission-capable rates overall and about 34 percent increase in our pacing units, which are those that we identify to go into the first opening days of a China-Russia campaign.

Probably is one of the more exciting parts is we are getting back in the air again. We are back to the 19 to 20 hours, 21 hours per month that perhaps you and I grew up with that we were unable to get to, even close. You know, pilots came into the Air Force to fly. Maintainers came in to maintain. Air traffic controllers came to control. If they don't think that we are serious about readiness, they are going to vote with their feet. You want to find the highest morale in the United States Air Force? You go find the highest levels of readiness.

Mr. BACON. Totally agree.

General Raymond.

General RAYMOND. I would just add, in the space community, our readiness levels are always relatively high, but we are measuring it off of a benign domain without a threat. And so where we have really focused our efforts is to train our operators to operate in a contested environment, procure the training infrastructure required to be able to do that, redo all of the metrics, if you will, that we grade ourself off of to add that contested nature, and so we can be prepared to provide the space capabilities our Nation needs.

Mr. BACON. Thank you. And one last question. I want to go to the electronic warfare. We are almost 30 years in that field, and I think we would agree, in the nineties, we sort of walked away from that. The electronic magnetic spectrum is a physical, finite domain, and the other side wants to deny that for our radios, talking to our satellites, using our radars. I think we fell behind.

And I heard a great briefing last Friday from the Joint Staff. I have also heard it from our Air Force one-star. I think we are making great strides, but I want to get your sense, General Goldfein. If we turn the corner, are we doing the right things? What else can we do to help?

General GOLDFEIN. Sir, that muscle atrophied in 19 years of fighting in this specific kind of campaign. So here is three things that we are doing to get that muscle, to get back in the gym. First was to suit up the 16th Air Force, the first numbered Air Force focused on information warfare, the combination of cyber, ISR, electronic warfare, and information operations under one of our most brilliant operational commanders who just came out of Cyber Command to lead that.

Second, we combined our A2 and our A6, traditionally intelligence and communications/cyber, into an A2/6, aligned our phone

book with the Navy that has an N2/6, and now we are focused on intelligence and cyber operations. In the 2021 budget, you will see that we are setting up a spectrum warfare wing, the first one of its kind, that will focus on nothing but electronic warfare. So we are back in the gym.

General RAYMOND. On the space side, in my U.S. Space Command hat, I am responsible for protecting and defending space. That requires protecting and defending that spectrum as well. We just stood up on the Space Force side a space electronic warfare group as well.

Mr. BACON. That is fantastic.

What I heard last Friday and I have also heard from General Gaedecke of [inaudible], if I'm saying his name right, we are finally at the spot where I think I am starting to feel comfortable that we are doing the right stuff, so I appreciate the hard work. Thank you.

Mr. Chairman, I yield back.

The CHAIRMAN. Thank you.

Ms. Sherrill.

Ms. SHERRILL. Thank you.

Thank you, General Goldfein, for your service. Your reputation precedes you. And thank you, Secretary Barrett and General Raymond, for joining us today.

General Raymond, I have heard a lot about the Space Force uniforms as well. You look remarkably like an Air Force officer, so we will see. It must be my untrained eye.

General RAYMOND. We are working it. I will come back and model.

Ms. SHERRILL. We are looking forward to it.

So over the past week and a half, this committee has heard from the Secretary of Defense and the Chairman of the Joint Chiefs of Staff, as well as service leadership, and at every hearing, including this one, members have expressed our concern about this administration and this Department's willingness to subvert the judgment of Congress in favor of their own judgment through reprogramming action. I am personally deeply concerned that the way this Department of Defense is using its reprogramming authority damages the trust between this committee and our DOD. And so in the Air Force example, what I am concerned about particularly is the F-35 program.

General Goldfein, you testified just last year that the Air Force needs to procure 60 aircraft per year to modernize the tactical fleet, meet the optimal production rates, and mitigate possible gaps. Do you still feel that way, sir?

General GOLDFEIN. Yes, ma'am, but I would say that in terms of total fighter force, we need 72 a year, and I am on record for that.

Ms. SHERRILL. So despite believing you need 72 a year, you requested funding for 48 F-35s. Is that correct?

General GOLDFEIN. Yes, ma'am. Flat budget, less buying power. That is the result.

Ms. SHERRILL. But you would not say that the 12 unfunded F-35s were simply an excess of your current programmatic need or simply a congressional special interest item?

General GOLDFEIN. No, ma'am. What was taken for the wall on the F-35 was what we call advance long lead procurement items.

What we do is to reduce the amount of time to bring the aircraft, there is certain items that we buy the year prior so that those parts are actually on the line when the airplane starts coming through. What they diverted was those long lead items. So it actually doesn't have an impact on the total number of aircraft we buy; it has an impact on the lead items for the next year.

Ms. SHERRILL. So what we do here in Congress is we look ahead to what we think our future modernization needs are, and we fund them at appropriate levels to meet the needs of our service fleet. So you said earlier that, quote, you know, when looking at the ALIS problems, why should we buy? We in Congress might say why should we buy you F-35s if you haven't fixed those problems? A broader question is why should we buy you F-35s when you are reprogramming the money we have already sent you for F-35s?

General GOLDFEIN. You know, ma'am, that is a good question. You know, the Joint Chiefs were asked, the Chairman specifically, about how to—you know, the question we were asked was does the reprogramming have an immediate strategic impact on our ability to defend the Nation. And so the answer that the Chairman gave was back was, you know, for the amount of money that was reprogrammed, no, it doesn't. It does have an impact. Absolutely.

Ms. SHERRILL. And I think as we look towards the new National Defense Strategy at the challenges that we are all going to face in the future, at the challenges of modernizing our fleet, we are balancing very strategically here in Congress the current needs of our DOD and any future needs as we see them. And it is very difficult for us to have any confidence that when we make those choices and we fund certain programs, that now our DOD is going to put that money toward the programs we have, in fact, directed them towards.

Thank you. I yield back.

The CHAIRMAN. Thank you.

Mr. Banks.

Mr. BANKS. Thank you, Mr. Chairman.

Last week, I asked Secretary Esper about the Space Force's opportunity to improve traditional Federal acquisition regulations. In response to my question, Secretary Esper stated that, quote, our biggest challenge is culture. We have to change our culture so it is less risk averse and more willing to take bets on the small guys, end quote.

General Raymond, what are your perspectives on how to develop a culture within the Space Force that is willing to accept risk on startups and the small guys, as the Secretary referred to them?

General RAYMOND. So we are a startup company ourselves, and so we want to build this in a way that capitalizes on that. We have done a lot of work here over the past couple years with the Space and Missile Systems Center out in Los Angeles to expand the number of nontraditional companies that are in this—in our business.

We have developed open standards so nontraditional companies can innovate to those standards. We have stood up a Space Rapid Capabilities Office modeled after the Air Force Rapid Capabilities Office to not have to fight the bureaucracy, to have direct access to the two chiefs sitting at this table and under the leadership of our Secretary.

And I think the other thing is we have delegated authority for programs down to a lower level. It used to all be held up at a three-star level. And if you are risk averse, if you grew up risk averse, and all of a sudden you are unleashed, it takes a while to feel unleashed and feel empowered. And we have been working that for the last couple of years.

Mr. BANKS. Appreciate that.

Secretary Barrett, last month, I and other members of the Future of Defense Task Force visited the Air Force Artificial Intelligence Accelerator at MIT [Massachusetts Institute of Technology], as well as Kessel Run in Boston. These organizations, along with AFWERX, have been aggressive at engaging across the national security innovation base, outside of traditional defense contractors, and bringing commercial and academic best practices and new ideas into the defense ecosystem.

I wonder, are you seeing the efforts of AFWERX and similar organizations disrupt the acquisition and requirements workforce, and what more can we do to sustain and scale those efforts?

Secretary BARRETT. Thanks for your support of those. It has really been transformational. Already just last week, we were judges on a Spark where, internal to the Air Force, people came forward with ideas, with inventions they had, or better ways of doing things, creative solutions to concerns.

So there is the pitch day that is bringing new small companies forward. And instead of the laborious process that they associate with the defense contracting, they were able to make their pitch, and if persuasive, leave that day with a contract with the Defense Department. It is really disruptive to the way it has been done. It creates a great enthusiasm by small companies on the pitch day ideas and internal creativity and innovation on the part of airmen and space professionals by having things like the Spark tank.

Mr. BANKS. Can Congress do more to support those efforts? What more can we do?

Secretary BARRETT. The authorities that you have granted are very helpful, and we will be looking in space to come forward with ideas that might shed more red tape that we find encumbers—

General RAYMOND. I think one of the challenges—we actually canceled a C2 program for space that wasn't going to deliver what we needed and went to an agile development way of doing business. I think one of our challenges is we need to make sure as we do this and we spiral that we give Congress the appropriate oversight, that balancing, the going fast with making sure that you have what you need to make sure that we are doing well.

Mr. BANKS. Appreciate that.

Mr. Chairman, I yield the remainder of my time to General Bacon.

Mr. BACON. Thank you, Mr. Banks.

One followup on the electronic warfare question. The Compass Call program. We budgeted 10 replacements for the Gulfstream. Six are paid for. I understand the Gulfstream production line is stopping. What is our plan to close out the last four? Thank you, General Goldfein.

General GOLDFEIN. Thanks, sir. We made a decision in the business case that said there is some mix of used aircraft and new air-

craft. What is the plan? So we are going to have—I think that the plan is like six and four in terms of new versus used. So the shut-down of the line doesn't affect us. We will be able to get our aircraft we need.

Mr. BACON. Thank you.

I yield back.

Mr. KIM [presiding]. Great. Thank you. The gentleman yields back.

I am going to be taking the helm here as I am next up on the line. So I wanted to just start by echoing my colleagues, General Goldfein, just of your incredible service. It has been great getting to work with you on this.

And, Secretary Barrett and General Raymond, it has been great getting to know you and work alongside both of you.

Secretary Barrett, I wanted to turn to you and just take a step back here. As you know, in my district, we talked about we have got Joint Base McGuire-Dix-Lakehurst, and a big part of the work that I have been trying to do is just really tried to harmonize the work between the joint base as well as the surrounding communities. Certainly, a big part of that has been about the community doing everything we can in New Jersey to support the joint base, as it is our second largest employer in the entire State of New Jersey, but another aspect of it is something about how it is that we can continue to make the joint base an engine for our economy in the area and continue to support our local businesses, our local efforts there.

So I wanted to just start off with sort of a broad question here. I would assume you would join me in thinking that it is critically important that our Air Force and our DOD understand that the military installations need to be a vibrant part of our community. Is that right?

Secretary BARRETT. It is very important to us in our communities that we be good neighbors and we be well integrated into the communities.

Mr. KIM. It definitely seems like a relationship that we would always want to continue to be mutually beneficial on that level. One aspect that I have been looking at is in terms of military construction and military construction spending. Now, if I get these numbers right, you can tell me if I am in the right ballpark, but it looks like we are at about \$2 billion in fiscal year 2018 for DOD as a whole and roughly about \$265 million for fiscal year 2018 for the Air Force. Does that sound in the ballpark?

Secretary BARRETT. It sounds in the ballpark.

Mr. KIM. Ish? Yeah.

Secretary BARRETT. The ballpark sounds right.

Mr. KIM. Well, you know, for me, as I have been digging through those numbers, I have been trying to get a sense of what kind of impact does the military construction resources and funding provide to businesses in New Jersey and local businesses, as we have a lot of great workers there who are trying to help set up the new hangars for the KC-46 and other things like that, but I really struggle to get further details about that type of impact. So, you know, I would like to work with you on this and try to figure out, you know, how do we do a better job of tracking what kind of in-

vestments are being made, especially when it comes to MILCON [military construction], into these local businesses? But I just wanted to get a sense. Does that sound like a reasonable thing that we can try to move on together here?

Secretary BARRETT. I would be happy to work with you to try to track that.

Mr. KIM. Yeah. Because I think, for me, you know, we certainly want to make sure that we have, you know, the best installations, the best construction for our military. And I think that when I get to know the local workers in our area, it certainly feels like, you know, that is a place where it can be a win-win here, that our local workers who are highly skilled, a lot of them go through apprenticeships and other programs. But I will be very honest with you, as I have talked with a number of businesses and workers in our area, they have struggled to kind of get their foot in the door, whether it is working for the joint base or other installations.

And I am just trying to figure out how we clarify this, you know. Some of it comes from helping them understand what the contracting process is, and I think we can try to find some steps to add greater transparency on that level. But I also think that there needs to be just sort of a reassertion of the importance that we are dealing with from this committee and from the DOD side on just what role we expect to play within our local communities.

And so I think from my end, I would love to work with you on trying to get deeper fidelity and what numbers we understand, because otherwise, we have trouble quantifying or articulating exactly what kind of investment we are doing. And I am hoping that we can work together as well to just make sure we reassert that importance of the local workers when it comes to our cooperation with the base. Does that sound right?

Secretary BARRETT. Congressman Kim, we would be happy to work with you on that and to do an assessment, track it, and determine if there are better ways we can be participants in the community.

Mr. KIM. Okay. Great. Well, look, I look forward to doing that with you all.

And I will yield the rest of my time here.

So next up, we are going to turn it over to Mr. Mitchell. You are now recognized for 5 minutes.

Mr. MITCHELL. Thank you, Mr. Chair. Thank you all for being here today.

First, let me start, as some of my colleagues have referenced, in particular Kessel Run with the Future of Defense Task Force. We got to visit there. I spent 35 years in private business, running a business much smaller than the Pentagon, trust me, starting new divisions. And I was incredibly impressed with their ability to solve problems quickly. The enthusiasm level, the motivation level of both the civilians and the personnel, the Active Duty personnel there was extraordinary. I wish I could have spent more time. I would have spent days there on what they are working on because it really was impressive. And I want to urge that—I know there are some questions about funding and all of that. We want to make sure we keep that type of operation going. It could have an impact on the problem we talked about with the F-35 with ALIS, a variety

of things that they will tackle in entirely different ways outside the box. And we are getting deliverables for the Air Force and for the military.

I also would like to switch gears a little bit. I went on a CODEL [congressional delegation]. We went to Iwakuni was one of our stops. F-35, talked to maintainers there about ALIS. We won't get into that. They had things to say, I am sure you can understand that. But the other concern that was raised was one about the ability to train in range. Because of their location, they are having to come back to the States or other places for training on the F-35s, which heightens my concerns about the issues of community oppositions where we bed down. We are talking about bedding down F-35s now in terms of Ops 5 and 6.

You are smiling, Secretary, yes. Without getting into what community, there is a significant backlash in the community that is scheduled to receive those. Literally hundreds—a couple hundred people last week showed up to protest that. The Member of Congress in that district, I believe, would chain himself to the gates to avoid having those F-35s put there.

We can invest a huge amount of money into an airplane that is obviously—I was out at Nellis and saw the operation of that Red Flag last year. It is extraordinary, but only if we get proficiency of the pilots, only if we keep them trained. So my question for you is, you talked about in the Senate, and I know Senator Peters raised the question about we are looking at community interests. Can you be a little more specific about that? Because I don't want to put aircraft, I don't care where it is. Yes, Selfridge Air National Guard Base I believe is a great place to put them, but we cannot put them in a place that will have issues of night flights being a concern, training flights, noise. There are other communities in the country that, you know, believe jet sounds are the sounds of freedom. How are you going to take that into consideration so you don't end up with an expense or an investment that is not best?

Secretary BARRETT. One of the most important things for training pilots is range access, and there is great range access over the lake, so it is really an important topic. There is a process that we have gone through, and so that is through measured criteria that have been preannounced and evaluated.

Mr. MITCHELL. Let me ask you about that.

Secretary BARRETT. Community welcome is one of the important—

Mr. MITCHELL. Let me ask you about that, because I think range access is critically important. But, however, it appears to me that you assess range access on a pretty general basis. And I say that because Selfridge has access directly to the largest range, both live-fire ranges and terrain, east of the Mississippi. I don't understand how we rate that even with other locations that have smaller ranges, less geographic diversity, less terrain diversity, and less ability for live fire. And if we are going, again in my opinion, to make the best investment on F-35s on this high-tech gen 5 aircraft, let's make the best environment for the training. So how are we going to put that into the equation so we actually assess that, in my opinion?

Secretary BARRETT. May I invite the chiefs?

Mr. MITCHELL. Absolutely. Thank you.

General GOLDFEIN. Sir, first, let me just say thanks for bringing up Kessel Run and the work that they are doing.

Mr. MITCHELL. Great work.

General GOLDFEIN. You know, while General Raymond is working on his uniform, I am trying to figure out how to bring hoodies into the United States Air Force so we can bring in some of the most incredible software coders on the planet.

Mr. MITCHELL. They are extraordinary. They are a lot of fun. I enjoyed those folks.

General GOLDFEIN. Let me tell you, though, that when it comes to the F-35 sustainment and the ALIS program, the software, here is why I am more confident today than I would have been testifying a year ago. Our folks are working now closely with the contractor and the subcontractors, and we are having one of the most mature, informed discussions we have had in this program about data, because data is the currency of future warfare. And if we don't have access to it, then we are going to get lapped by the adversary. The fact that we are having a mature discussion with Kessel Run involved and folks who understand this business with the company that manufactures this airplane gives me my greatest optimism I have had in years.

Mr. MITCHELL. We are going to run out of time here, and I am not going to try to abuse the acting chair who might be less aggressive than Mr. Smith, but let me just remind you, you have heard today, Secretary and General, that there are other communities in this country that will embrace our military capabilities, the F-35, and provide and ensure that training opportunities are available, and they are not limited. And we, I think you have got the sense, will be looking at that very carefully in terms of what decisions are being made on that and how they are being made, because it is an extraordinary investment in the gen 5 aircraft at the future of the Air Force. So please understand that that oversight is going to continue.

Thank you.

General RAYMOND. I know we are over time. Could I have like 10 seconds? I just want to pile on—

Mr. KIM. I have to step in here if—

General RAYMOND. I just want to pile on to Kobayashi—or Kessel Run, and we have one in the Space Force called Kobayashi Maru. And I will tell you, we just went to them and said to both, the leaders of both, and said design a software capability for the Space Force, and we are going to implement that going forward as well.

Mr. MITCHELL. Great. Thank you.

Mr. KIM. Thank you. I don't want my colleagues to think I am going to go soft on them up here.

I am going to turn it over to my colleague, Mrs. Luria, for 5 minutes. Over to you.

Mrs. LURIA. Thank you, Madam Secretary, thank you, Generals, for being here to talk about the Air Force budget today. And I wanted to single in on a comment that stood out in General Goldfein's opening remarks.

General, you said, I am a hundred percent confident we have what it takes to win. But when I go back to 2018, the Air Force

proposed to grow its end strength to 386 operational squadrons, and in the budget request that we are looking at today doesn't get us there. And so what I am really trying to get at is understanding, obviously, that there are limited resources, but, you know, saying that we have what it takes to win doesn't display a sense of urgency that we really need to get to 386 squadrons in order to win. And so from our perspective, when we have to make complicated choices with limited resources, what are we supposed to take away from that message?

General GOLDFEIN. Ma'am, that is a great question. I think it is important for the American people to hear a Joint Chief have the confidence that we can protect this Nation if called upon. And so make no mistake; it will be a long and bloody fight. We will lose a lot of airmen, but we have what we need to win.

Now, the 386 operational squadrons was a discussion that we began with Congress, which was a conversation that, quite frankly, we had not been having. The first time you saw us was when we came over here to tell you the Air Force we could afford. We actually never put on the table for you the Air Force we need to win. And so 386 operational squadrons is not a gold-plated answer.

When I went to war as a young captain, and we kicked a non-nuclear middleweight power out of Kuwait, we had 412 operational squadrons. We are saying we need 386 to defeat a nuclear peer. It is not gold plated. The fact that we didn't actually advance towards 386 is the reality of a flat budget with 2 percent less spending power.

Mrs. LURIA. So another comment that was made, and I appreciate that, and I understand as the chief of the service, we have confidence in our forces to execute the mission as necessary and take on all adversaries, including near-peer adversaries. But, you know, when we are looking at the budget, we want to give you the tools that you need to win, so that is kind of the discussion that we are having here and certainly believe with full confidence in our forces' ability to fight with the tools that they currently have, but we want to know what they need for the future.

And General Raymond, you mentioned in your remarks that to establish Space Force is the number one priority of the U.S. Air Force. Just taking a step back, because the Air Force has a huge part in this, you know, I strongly believe that modernizing the nuclear deterrent is incredibly important and that a strong nuclear deterrent is the cornerstone of our national defense. So, again, somewhat competing priorities if we are to sit here and make decisions between things that have very large price tags but are also very fundamental to our national defense. Can you speak briefly on that?

General RAYMOND. Yes. So, clearly, the nuclear mission is the top mission in the United States Air Force. I mean, we have to absolutely do that right. We are just starting the Space Force. And so a near-term priority is to get that Space Force right, because I will tell you, it is equally critical to our security and the security of our allies. We have had the luxury, the absolute luxury over the last couple of decades of operating in a very peaceful, benign domain, and I would welcome the opportunity to come talk to you in a closed session about the threats that we are seeing.

Mrs. LURIA. I would enjoy that opportunity, and I also see a great opportunity for developing a service from scratch.

General RAYMOND. We do.

Mrs. LURIA. As someone who served in the Navy for 20 years myself, when I look back, as soon as we started integrating women, we were trying to fit a different model into something that had preexisted. But I think it is huge opportunity, as Representative Brown said, for women, increasing diversity, and all of those things to start from scratch with a vision statement and recruiting that supports a new force with a blank slate.

General RAYMOND. Wholeheartedly agree.

Mrs. LURIA. And I would love to have that conversation.

And switching to the next topic very quickly, climate change, sea level rise, recurrent flooding. In Hampton Roads, we have eight major military installations. One of those is Langley Air Force Base. And your budget justification for the project that was listed there for the access control point—because if people can't get on the base, they can't get to work, they can't do their jobs—basically said that, in justifying the land acquisition portion of that, that Langley is not within the 100-year flood plain. However, it was one of the 18 installations listed in the 2016 DOD report that were the most at risk due to flooding and other environmental issues and sea level rise.

So I would also love to hear more specifically about the justification for that and what we can do to make sure that our airmen can get on Langley, and also with NASA [National Aeronautics and Space Administration] Langley facility enjoying the same access route, and they are critical to the work that we are doing on hyper-sonics as well.

Secretary BARRETT. The United States Air Force learned a great deal after Offutt Air Force Base and Tyndall were damaged in the past several years, and we have Congress to thank for funding the repair. As we rebuild, we are building to new parameters, to new guidance, and to new management, new construction models which incorporate flooding and wind damage as elements, revised elements, to build those standards. So we are, in fact, taking it very seriously that we need to make sure that our folks can get to work each day.

Mrs. LURIA. Thank you. We have run out of time.

Mr. KIM. Thank you.

I am going to turn it over to Mr. Wittman now for 5 minutes.

Mr. WITTMAN. Thank you, Mr. Chairman.

General Goldfein, Secretary Barrett, General Raymond, thanks again for joining us. General Goldfein, thank you so much for your extraordinary leadership and service there with the Air Force. We thank you for all that you have done. We look forward to working with General Brown. I know that he will have big, big shoes to fill.

I want to applaud you for all you are doing to prioritize modernization within the Air Force. We know the big delta that you have been given with this and where we are today and where we need to be. And we know that during times in our military, there are these points where we have to go through pretty big efforts to be able to modernize. I know all the things that the Air Force does.

In this time of great power competition, the challenges we face are multifold and in many different areas.

All the things the Air Force has done in research and development in places like hypersonics, directed energy, autonomy, cyber, propulsion, mass weapon payload systems, and advanced space dominance in the future, are all extraordinarily important. And you talk about multi-domain operations, taking all those things and integrating them together. And technology is fantastic. And we are the best innovators and creators in the world, but in and of itself is not the panacea.

So the question is, is as we are looking at all those things, how do we take all that great technology and integrate it into modernization within the Air Force, integrate it into modernization of the Space Force, and then how do we integrate that into the joint force? All those different elements are a lot of different moving pieces. I think that is going to be the real secret sauce. It has been the secret sauce about how we have operated previously. That is what our adversaries don't quite get to, and it is where we are going to maintain our strategic and tactical advantage in the future.

Give me some of your thoughts about how these technologies are developed quickly. And the Air Force RCO [Rapid Capabilities Office] does a great job in really getting technology, getting it to the forefront, getting it out there. But how do we make sure that we are doing the right thing in testing and integrating all this different technology in the systems that have significance today, tomorrow, next month, next year, and next decade?

General GOLDFEIN. Thanks, sir. It is a great question. You know, industry is ahead of us on this. They have learned that if you want to do artificial intelligence, hypersonics, quantum, some of these, you know, game changers, you actually can't skip the steps of common digital architecture and data architecture. So the Department of Defense, we can't skip the step. We have got to do it.

Here is what gives me confidence that we are doing this the right way. Number one, Chairman Milley's guidance to me when he designated the Air Force as the service lead to work this for was crystal clear. We are not bringing forward a single service solution. We are bringing forward a joint solution, and the Army, the Navy, the Marine Corps, the Coast Guard, the investments they have made in their own C2 has got to fit into anything we bring forward. That is number one.

Number two. The Joint Chiefs, I will tell you now, you know, coming up on my fourth year, it is an interesting relationship that we have now because we have all grown up fighting together. I mean, you know, Jim McConville was the chief—was the commander at Bagram when I was the air component commander. We fought together. So there is a level of trust between the Joint Chiefs that I would offer that this is the way that this committee ought to expect us to operate as Joint Chiefs, sitting here especially with my fellow Joint Chief.

And the last thing I will tell you is that trust as we build this out means that I make sure that the investment that the services have made in their C2 fits into any architecture that we do. We are all going out to Nellis Air Force Base next month for a dem-

onstration, and we are on a 4-month cycle where we are connecting capabilities, and we are solving problems, and we are doing this the way that industry—and I will finish with saying that we have brought on 12 pioneers that have done this successfully in industry. One of the designers of the Uber app actually now is on the Air Force payroll.

Mr. WITTMAN. I appreciate all those efforts, and I think those things are incredibly important as you transition through this modernization. One of the elements of modernization, and you point to, with multi-domain operations, is transitioning from legacy systems, retiring legacy systems. The systems that we needed yesterday, last month, aren't what we are going to need next month, next year, as I said, next decade.

But give me your perspective; because it is not just retiring legacy systems, but it is making sure the transition is proper. So if we are retiring a legacy system, how do we make sure that we have in place, operationally proficient, the replacement system for that? Because I think that is what concerns all of us, is not necessarily getting rid of those systems, but making sure we have the proper ones fully operationally in place before those other ones are taken out.

General GOLDFEIN. Secretary Mattis used to have a framework. He would force us—if any of us said what he called the “R” word, the risk word, we had to answer three questions: To who, for how long, what is your mitigation. This is real risk to the combatant commanders. And I don't want to understate that, to General Lyons, for me to retire tankers is real risk. For General McKenzie, for me to retire ISR is real risk.

How you mitigate is by connecting this force so that you make use of all the sensors that are now available and the ones that we are fielding, so we can go forward and do this in a way that we can do it better than we are today.

Mr. WITTMAN. Thank you, Mr. Chairman.

Mr. KIM. Going to have to cut you off there. We are going to turn it over to Mr. Brindisi, over to you for 5.

Mr. BRINDISI. Thank you, Chairman.

And thank you, Secretary, and both Generals for being here today. I don't want to belabor the point, General Raymond, because I know you talked about this earlier, integrating National Guard units into Space Force. And as you know, Space National Guard units across eight States are currently working on space-related missions, including the triple deuce, which is 222nd Command and Control, which is in Rome, New York, in upstate New York, so I would welcome a further conversation with you as we discussed earlier to talk about that integration. Thank you.

General RAYMOND. Happy to do so.

Mr. BRINDISI. Secretary Barrett, the NDS reoriented our strategy to focus on great power competition, ensuring we stay ahead in terms of research and development of game-changing technologies, like quantum science and AI. And as you know, the Air Force Research Laboratories Information Directorate in Rome, known as Rome Lab, has been at the forefront of both quantum research as well as CUAS [countering unmanned aerial systems]. And I wanted to ask if you could briefly speak on how you view competition with

China regarding these critical technologies like quantum and AI, and talk about your vision for how we can use our incredible DOD lab base to ensure we win this technology competition with China.

Secretary BARRETT. Our ability to compete against great powers, especially against China, with their use of technology and their trajectory in development, will not be possible without using quantum capabilities, without AI, and without the kind of leadership that the Rome Labs have demonstrated. We will lean upon the outcome, the product of those labs, long into the future, so that they are quintessentially pivotal to our future.

Mr. BRINDISI. Do you think, just to follow up on that, do you think we are investing adequate resources fast enough to keep pace with China?

Secretary BARRETT. When it comes to innovation, I always feel like there isn't enough, we are not doing enough, but it is a high priority.

Mr. BRINDISI. And can you talk a little bit about the Air Force's efforts to improve public-private partnerships and research of emerging technologies?

Secretary BARRETT. As Chief Goldfein demonstrated in his comments, we really are experimenting, doing new things, trying new techniques, working in partnerships that previously didn't exist. So it is really a great focus of the United States Air Force, and really throughout the Department of Defense, on making better use of friends, allies, partners, in the United States and abroad.

Mr. BRINDISI. Thank you. And I know I had the privilege of welcoming Secretary Wilson to Rome Lab last March. I know she was very impressed with the innovative groundbreaking work that they are doing, and I would extend the same offer to you. I think you certainly would be very impressed by what is happening there.

Secretary BARRETT. Thank you. I look forward to it.

Mr. BRINDISI. I want to shift real quick to mental health and suicide prevention. I also have the privilege of serving on the House Veterans' Affairs Committee, and I appreciate in your testimony you recognize that suicide is a, quote, insidious threat to our force, and it is devastating military families. I know the Air Force is focusing on suicide prevention and providing our airmen with resiliency skills, but last year, 137 airmen—Active, Guard, and Reserve—died by suicide. Last year, the Air Force's number of suicides was the highest level in three decades.

Can you briefly speak to what the Air Force is doing now to address this trend and how you plan to change the Air Force's approach as you move forward here?

Secretary BARRETT. This is one of the scourges of our time. It is something that is devastating to the morale in our communities, and it has been taken seriously, especially by Chief Goldfein during this past year as we look to implement specific things that can help to move the needle on that. And I would invite his attention to it.

Mr. BRINDISI. Yes, General.

General GOLDFEIN. Sir, suicide is killing more airmen than any adversary on the planet. It is an adversary. And the way we are attacking it and defending ourselves is through two primary efforts. First of all, at the institutional level, we are taking a page out of what Special Operations Command very successfully insti-

tuted called the Preservation of the Force and Family. And we are spreading that across the Air Force at Operation True North, and we have money in this budget to expand that to 14 bases as we continue to expand that out.

But the most important work that we are doing is at the unit level. So we asked each wing commander—Active, Guard, and Reserve—to stand down their wing at a time and place of their choosing to kick off a yearlong campaign to get after this adversary; make it personal, make it continuous. And so we have not seen the numbers go down yet, but we are attacking it aggressively.

Mr. BRINDISI. Thank you, General, very much. If there is things that we can work on as a committee, or even in the House Veterans' Affairs Committee, I know this is an area that I have great concern and many Members do. So I appreciate your efforts in this regard.

I yield back.

Mr. KIM. I agree with my colleague on just the importance of that issue and what we can do to address suicides in our services as well as with our veterans.

I am going to turn it over to Mr. Kelly now. You are recognized.

Mr. KELLY. Thank you, Mr. Chairman.

And, General Goldfein, again, thank you for your service. You have heard that, but it matters. You have made a difference in your 4 years here, and so have all the—the Joint Staff. I do ask that we pay attention, and we talked earlier about diversity. And I think we have got to change not just diversity in who we are getting to fly, but I think we have to change the culture.

So, Madam Secretary, you have kind of faced this, so I want you to say, what are we doing to change the culture in the Air Force so that minority and women want to be Air Force pilots?

Secretary BARRETT. Well, again, I would invite the comments of the chief as having been in those squadrons through his career. But, first, getting the law changed was—the irony that we were, for much of the Air Force's history, excluding women from the opportunity to fly high-performance aircraft. We could fly tankers and transports but not fighters and bombers. And that took a law change, and it took a bipartisan effort to get that to change. But now that means women can be there, but are they welcome and how are they included? That has been a longer challenge and a longer process. And I would invite the chief to speak to that.

Mr. KELLY. I just wanted—and let me, Chief, I think we have got to advertise. We have got to make those young ladies and those minorities, they see that TV commercial, and they want to go fly fighters for the United States Air Force, or the United States Navy, which we are not talking about now.

Going back to the Joint Chiefs. You know, it really—it's probably just me, but it really bothers me that we don't have Chief of National Guard Bureau sitting at the table at any point in this process. They represent a huge part of our Air Force. They represent a huge part of our Army. Yet they are never in these budgetary hearings, and although there is one Army, one Air Force, one Nation, they still have differing things that I think they can add something. So I hope that people are out there listening, and we will change that so they are here.

General Goldfein, this is for you. I just hope I can get your commitment when we talk about modernizing C-17s, when we talk about modernizing our KC-135 46 fleets to do our strategic air, the things that we are going to have to continue to do, the C-130J modernization that has now been turned off. I just—I hope that we will stay committed to the Air Guard and Air Reserve to make sure that we don't promise them that we are going to modernize and then at the last minute, go, well, you will get the next go-around and we will put you at the end again. So can you tell me what we are doing to keep that on pace?

General GOLDFEIN. No, I can, sir. And I will tell you that, you know, Ranking Member Thornberry brought up a comment in the beginning about CR [continuing resolution]. And so if I could take, you know, 30 seconds and tell you, you know, we have to acknowledge, what a CR does is it keeps me from being able to do any new starts, hiring civilians. So I pretty much stop.

But we don't talk enough about what it does to industry. If you are a CEO and I am going to industry partners, and I am saying, hey, listen, I can't tell you what I am going to buy you next year, but I need you to keep a sophisticated workforce working, and then I am not sure exactly when I am going to get that money, it wreaks havoc. And so much of the modernization you talk about, we require industry to be partners with us on this, and the CR affects them as bad as it affects me.

Mr. KELLY. And I agree with that, but I am taking ownership for our CR part. But they are not the one who just reallocated and not modernized. And so I think we all have to take our piece of that, and I just—the other thing I want to go back to, Secretary Barrett, you know, we have a great female fighter pilot who trains our pilots in Columbus Air Force Base, which is in my district, Colonel Samantha Weeks. And so we need more role models like her. Although I hope she is not listening, because she is not getting me up in one of those jets and making me cry.

Secretary BARRETT. Well, I would just tell you that you should be proud of your neighborhood in that it was Judy Dunaway, a woman from Columbus, that was instrumental in moving the law, changing the law to allow women to fly fighters and bombers.

Mr. KELLY. And then just real quick, as ranking member of the Military Personnel Subcommittee, EFMP [Exceptional Family Member Program] is very, very important to me. And so I want to know, Madam Secretary, what we are doing. We are currently closing Dover Air Force Base or talking about that. So now we are putting those same families out in the local community, and we are going to saturate that. What are we doing to make sure when we close MTFs [military treatment facilities] that we are continuing to take care of our EFMP families and also just our regular families of all our service members?

Secretary BARRETT. Well, I will tell you that I chaired a meeting yesterday to talk on exactly that subject, and it is not being well managed now. We need to figure out if it is too broad a category, if we are just not—we are just not meeting the needs as well as we should for our families, and that is an important topic for us.

Mr. KELLY. And I had one for you, General, but I am out of time. Thank y'all so much for your service.

Mr. KIM. Thank you.

I am going to turn it over to Ms. Speier. Over to you for 5 minutes.

Ms. SPEIER. Thank you, Mr. Chairman. Thank you all for being here today.

To you, General Goldfein, if this is indeed your last visit, extraordinary service to our country. Thank you.

To Secretary Barrett, thank you recently for your phone call. I also want to alert you to a company in my district called Zipline that is working with the Army, is providing, by drones, blood supply, drugs, to various locales around the world, particularly in Africa right now. But I see a great resource there in terms of potentially providing spare parts to the Air Force when we have so many of our aircraft down because of maintenance issues, which takes me to the F-35 program, which I think you answered earlier.

I was at the Intel [Intelligence] Committee and I regret I wasn't here for the response. But how are we going to sustain two squadrons outside of Fairbanks, Alaska, if the spare parts issue is not dealt with?

General GOLDFEIN. Ma'am, we have actually made significant progress on parts. In the last two combat deployments, we have taken, for us with the F-35A in the Middle East and with the Marine Corps who went to the Pacific, both of those newer aircraft were able to establish an 80 to 90 percent mission-capable rate while they were deployed. That is dependent on parts.

And where we have been focused with Lockheed Martin is looking at sustainment and scaling the sustainment enterprise so we can have the parts that we need going forward.

Ms. SPEIER. Are we looking at 3D [three-dimensional] printers?

General GOLDFEIN. We are, as a matter of fact, yes.

Ms. SPEIER. All right. Maybe you could, for the record, provide us some additional information of how you are utilizing that.

General GOLDFEIN. Absolutely.

[The information referred to can be found in the Appendix on page 83.]

Ms. SPEIER. Secretary Barrett, the Defense Advisory Committee on Women in the Services [DACOWITS] have recommended that all Armed Forces implement significant family planning education and provide various methods of contraception. There is a 60 percent higher rate of unplanned pregnancies in the military than in the regular civilian force, and 95 percent of all women serving are of reproductive age. So it appears the Navy and Marines are doing a better job than the Air Force and Army in this area. For instance, the Navy is promoting long-acting, reversible contraception and other forms of birth control at basic training, for those who want it, requiring recruits to meet individually with medical providers, and providing access to contraception at sick call or walk-in clinics to help reduce unintended pregnancy rates. It is, as we all know, a readiness issue as well.

And so I am wondering, even though DACOWITS has recommended that the Navy program be implemented in all services, and there was instructions in May of 2019, what has the Air Force done in delivering this kind of benefit to its servicewomen?

Secretary BARRETT. We had a conversation, again, on that topic just yesterday, talking about pregnancy and deployability and a variety of things. As a former member of DACOWITS, I care about their recommendations. I have not seen the reversible birth control topic, so it is something I will take a look at.

Ms. SPEIER. All right. And as the chair of the Military Personnel Subcommittee, my colleague, Ranking Member Kelly, referenced the Exceptional Family Member Program. We had a hearing on this issue just a few weeks ago. We had such an overflow crowd of families that we had to access a separate room. So later this month, we are going to actually have a townhall in which we are going to hear from families. And if you are inclined to participate, we would welcome your participation.

I think that one of the issues we are going to have to look at in the NDAA this year is providing at each installation a legal representation—representative who can assist these families in meeting with local school districts and providing the appropriate independent education plan that they each deserve.

And, General Raymond, let me conclude with you. I had the privilege just last week of being at the Space Command and also at the Air Force Academy. There is so much enthusiasm for the Space Force that it is a great shot in the arm. At the time I visited, I understood that there were actually two persons associated with the Space Force: you and your deputy. Has that number increased at all?

General RAYMOND. Well, first of all, thank you for visiting. The team really enjoyed hosting you. There is actually one, and that is me.

Ms. SPEIER. Oh.

General RAYMOND. We are about to swear in the Senior Enlisted Advisor, which will be No. 2. And then really exciting, this May, out of the Air Force Academy, about 65—don't quote me on the number—63 or—

Ms. SPEIER. Well, they had told us 60 at the—

General RAYMOND [continuing]. Will get directly commissioned into the United States Space Force. And then the rest of this—throughout the fall, we will start transitioning more. So there is one person officially on the books. We have about 16,000 airmen and civilians assigned to the Space Force, and we will take portions of those and move them over onto the books of the Space Force.

Ms. SPEIER. Thank you.

General RAYMOND. I also want to thank you for your efforts on EFMP. It is really important. It is really important work. And I would love to come by and have an office—

Ms. SPEIER. Oh, would you? If you would like to participate in the townhall, we would enjoy having you as well.

Thank you. I yield back.

Mr. KIM. Thank you.

We are going to turn it over to Mr. Waltz now.

Mr. WALTZ. Thank you. Thank you, Mr. Acting Chairman. Appreciate it.

General Goldfein, thank you for being in the fight all these years. And to you and all the airmen, I wouldn't be alive today and wouldn't be sitting here representing north Florida if it weren't for

the United States Air Force. And I also want to thank you and commend you, and you as well, Secretary Barrett, for your work on light attack. We had this conversation a year ago. I just attended another Green Beret funeral yesterday from Afghanistan. This capability is, in my opinion, which we know well, has been long overdue and needed.

I am pleasantly just really grateful and stunned at the supersonic speed with which you have moved to put the MOU [memorandum of understanding] in place with SOCOM [U.S. Special Operations Command], to put the money in the FYDP and in this year's budget to transfer over to SOCOM to procure those assets.

I want to be clear on one piece, because I fear there could be some confusion out there. You have had a lot of questions and talk about retiring the A-10 airframes, close air support airframe. Obviously, the light attack is an overwatch, different function. You agree with me, and I want to get out there on the record, those are two totally separate, divorced, independent moves. That is not a—that is not, not, not, a drawdown of A-10 for light attack; those are completely separate drivers?

General GOLDFEIN. Completely separate.

Mr. WALTZ. Thanks, Chief.

Secretary Barrett, I look forward to seeing you—switching to space, I look forward to seeing you at the renaming, and you as well, General, at the renaming of Patrick Air Force Base to Patrick Space Force Base. I understand—apologies, I wasn't here with Representative Lamborn, but I understand from your answer to him on the command issue, you are going to open that kind of competition, for lack of a better word, but open that selection process up. I think the Futures Command process that the Army went through was very fair and reasonable and open and gave communities a chance to kind of make their case. Is that—is that my understanding from—

Secretary BARRETT. That is right. In fact, we are working with the Secretary of Defense, who was a part of the Futures Command process, and that is informing what we will be doing in opening the Space Command competition.

Mr. WALTZ. You still expecting an announcement this year?

Secretary BARRETT. Yeah, this year. This year to announce the process and to get the process going, and a selection by the end of this year or early next year.

Mr. WALTZ. Great. Thank you, Madam Secretary.

General Raymond, thank you for the visit yesterday. I just want to reinforce my colleagues, we talked about the Guard issue and where we are on that. I just wanted to give you a minute to talk about the space threat. There are few briefs that really make the hair on the back of my neck stand up, like what our adversaries are doing in space. And I have taken it on to just help our voters, help Americans understand how dependent our economy is on space, how dependent every individual in this room is, how we touch space 20, 30 times a day without even realizing it, and how our assets have to be protected. But we have to get to a deterrence model, and we can't get to a deterrence model with our adversaries in the world understanding what we are capable of doing unless we can talk about it. And I just wanted to—over to you, General.

General RAYMOND. I really appreciate that question. Clearly, space is a warfighting domain, just like air, land, and sea. That is why the Space Force and U.S. Space Command are so critical. We do not want to get into a fight that begins—excuse me—or extends into space. We want to deter that from happening. I think it is really important that America understands—the average American understands, just as you said, how reliant they are on space capabilities, but also the growing threat. Everything from reversible jamming of communication satellites and GPS satellites to directed energy weapons—

Mr. WALTZ. And when we say—just to be clear, when we say, you know, our modern economy and society is dependent, agriculture, banking, telecommunications—

General RAYMOND. Across the board.

Mr. WALTZ [continuing]. Weather, disaster, across the board—

General RAYMOND. Right. And so—

Mr. WALTZ [continuing]. Farming.

General RAYMOND. Yeah. So not only does it fuel our American way of life, but it also fuels our American way of war. And there is nothing that the joint and coalition force does that isn't enabled by space. Absolutely nothing. And so—

Mr. WALTZ. Thank you. And just in my remaining time, if you could submit for the record, I think it is important too, I also sit on the Science, Space, and Technology Committee, so I see the civilian side of what we are trying to do with the Moon and Space Station and others, and how the Space Force and NASA are working together so that we can still operate in a challenged space so that NASA can operate in a challenge—if you could submit that for the record.

General RAYMOND. I absolutely will. We are working closely together.

[The information referred to can be found in the Appendix on page 83.]

Mr. WALTZ. Thank you. Thank you, Mr. Chairman.

Mr. KIM. Thank you.

We are going to now recognize Mr. Carbajal. Over to you for 5 minutes.

Mr. CARBAJAL. Thank you, Mr. Chair. And welcome to all of you, and thank you for your service.

General Goldfein, I am sad to hear that you are going to be leaving us in the near future. And as my colleague Representative Brown said, I do hope you stay engaged, because your perspective and insight and wisdom will be greatly appreciated in a continued way, so—

Vandenberg Air Force Base is located in my district. Its mission is to enable space superiority through assured access to space by providing robust, relevant, and efficient spaceport and range capabilities for our Nation. I understand in November 2019 the Air Force Space Command held an interagency tabletop exercise focused on the future of military launch facilities and how they can also support growth in commercial space.

To any of the witnesses, how did the exercise help the Department understand what investments and policy changes are needed

to meet the growing demand for space launch resources on our ranges? What are the next steps?

And, General Raymond, I know you were—you commanded Vandenberg Air Force Base at one point. So——

General RAYMOND. Second Lieutenant Jay Raymond showed up at Vandenberg 36 years ago. Been stationed there four times. It is an absolutely critical, critical place for national security and national security space. Assured access to space is a vital national interest, as laid out in the National Security Strategy. Vandenberg has a critical part in that, as does Cape Canaveral and others.

To meet the warfighting demands of this domain and the strategic environment of this domain, we have to increase the capacity of our launches. We have to reduce the costs. We have to lower the barriers of entry into space. We have to capitalize on a—this is a terrible word to use in the space business, but an explosion of commercial space capabilities. And so we are working on a vision for the future, a range of the future, getting after autonomous operations, being able to have plug-and-play ranges, being able to have a more resilient range, being able to increase those launch rates, reduce costs, and reduce duplication between us and, for example, the FAA [Federal Aviation Administration] that licenses commercial launches. So as we put this vision together, this tabletop exercise helped inform that vision writing.

Mr. CARBAJAL. Did infrastructure come up at all in terms of the need to be able to build up——

General RAYMOND. Absolutely. You know, if you look at—I mean, I have been in the launch business for years. And, historically, when we conduct launch operations, because we have to be able to destroy everything that is launched for public safety if it were to go astray, we have large amounts of infrastructure, as you know, to do that launch, to support that launch. Where industry is going is, that is all autonomous. That allows us to change the range, reconfigure the range very, very quickly. It reduces launch costs considerably, and I think it is what is enabling commercial space competition to come back to the United States.

Mr. CARBAJAL. Thank you, General.

General Goldfein or Secretary Barrett, any other comment?

Secretary BARRETT. Nothing to add.

Mr. CARBAJAL. Thank you.

General Raymond, you have called for investments in infrastructure and changes in how ranges are managed so they are more responsive to national security and economic demands for space launch. Can you elaborate on your assessment a little bit more that we touched on just a little bit? Are you working with the ranges to identify and then prioritize the necessary infrastructure investments?

General RAYMOND. We absolutely are. The big thing—my big push was to make sure that we have common architectures between both coasts to help reduce costs and reduce overhead. We also want to have a plug-and-play capability. Historically, when a launch vehicle wanted to come to, let's say, Vandenberg to launch, it would take us years to work through all the paperwork to be able to get them onto the range and launch them safely. We need to speed that up. We have to get much quicker in our ability to

launch. I am excited for where we are going. We have already made significant strides. Vandenberg is a critical part of that. Already made significant strides, but we have to get the plug-and-play, data-driven ranges that will enable us to do what we need to do for national security.

Mr. CARBAJAL. Thank you, General.

And let me just conclude by saying, the district, the stakeholders, the communities around Vandenberg are extremely excited about not only what this means for our national security, but what it will mean for our area in terms of the economy and the investments we make. So I want to thank you, and ask that you please continue to consider the importance of Vandenberg as it relates to our advantage.

General RAYMOND. It is a critical, critical, strategic location and capability. Our major command and control capability for all DOD space resides on that base. It is hugely important to us.

Mr. CARBAJAL. Thank you.

Mr. Chair, I yield back.

Mr. KIM. Thank you.

We are now going to recognize Mr. Scott for 5 minutes.

Mr. SCOTT. Thank you, Mr. Chairman.

General Goldfein, General Raymond, Secretary Barrett, thank you for being here. I have a couple of concerns that I mentioned yesterday, that I will just state for the record. And I know the Air Force is going to give me answers on this. But moving \$8 billion of the weapon system sustainment to OCO, out of base funding and into OCO, I have serious questions about that from a long-term strategy, and appreciate the opportunity to speak with you about that earlier, and look forward to more detail on that, but that is something that I think we as a committee will have to work to fix. The base funding is more stable than OCO funding, as you know. And want to speak further about that.

I do want to speak briefly on the JSTARS [Joint Surveillance Target Attack Radar System]. I am concerned that the money for updating the Common Data Link is not enough to actually execute the program. Historically, it has been in the \$20 billion level, and my understanding is the request this year is at the \$3 billion level. The fiscal year 2019 NDAA has said that the Air Force shall provide not fewer than six dedicated E-8C JSTARS aircraft each fiscal year for allocation and support to the combatant commands. There is only \$11 million requested in fiscal year 2021 for—\$11 million total for all of the upgrades and modernizations, \$3 million of which, as I understand, is for the Common Data Link. I mean, do you believe this is enough to provide the combatant commanders with the six that are required in the fiscal year 2019 NDAA?

General GOLDFEIN. Sir, what we funded throughout this is, as we have discussed this, that when we did the infrastructure work on the JSTARS to determine that it could fly into the late twenties, 2027 and beyond, that is what allowed us to bridge without a gap to Advanced Battle Management System [ABMS].

Mr. SCOTT. That is right.

General GOLDFEIN. The point on data links that you make, we are actually leveraging technology. And I would actually like to sit down with you in a closed setting and walk you through where we

are going with some unconventional work we are doing on data links that allow us to actually bridge between systems using some new technology that actually industry has made available.

I will just give an example. We were able to use a Valkyrie drone to actually have F-22s and F-35s communicating through a universal translator. We are finding that we can do that more often, which is what you are seeing in some of the budget numbers.

Mr. SCOTT. Okay. But we do have the agreement that we are going to fly the JSTARS until ABMS has proved that it can handle—

General GOLDFEIN. Yes, sir.

Mr. SCOTT [continuing]. The GMTI [Ground Moving Target Indicator] mission and the command and control aspect of war?

General GOLDFEIN. Yes.

Mr. SCOTT. And my concern is, as somebody who has both ABMS and JSTARS at their base, if we are talking about it from the soldiers' standpoint, my concern is that we start—we are seeing what appears to be the starting of the JSTARS mission, when we are going to have to depend on that platform at least into the 2030s, as I think there is broad agreement on. And so, \$11 million in upgrades and modernization, is not much money when you are starting to talk about a legal requirement to maintain six aircraft for the combatant commanders.

As you know, and this was brought up yesterday, and this has been reported widely, Breaking Defense probably had the toughest article, I think, on it, where the leadership at Army Futures and Concept Centers expressed concerns about ABMS. Can you tell me how you are working through that with the Army?

General GOLDFEIN. Yes, sir. And I will tell you that—I will tell you three things. Number one, Chairman Milley's guidance to all of us, and certainly to me as the Chief of Staff of the Air Force, since we are responsible for leading the effort on command and control of the joint warfighting concept, his guidance was crystal clear, which is, we are not to build a single-service solution. What we are to do is to preserve the investment that each service has made connecting itself, whether that is IBCS [Integrated Battle Command System] for the Army or what the Navy and the Marine Corps. Our job is to figure out, okay, how do we take that investment, preserve it, and actually connect it so we can fight better as a joint team.

We are going out in April—we just completed in December our demonstration No. 1. We are doing our next demonstration with all the Joint Chiefs there, and we are going to take three combatant commanders, of which one is at the end of the table, General Raymond, and he is going to be the supported commander for the first part of this exercise, this demonstration. And we are going to connect capabilities, because he is going to need an all-domain solution for a problem that he is given in this demonstration.

Then we are going to shift to General O'Shaughnessy for defense of the homeland, and then we are going to shift to the STRATCOM commander. All the services are going to be represented. And we are going to be doing live fly. We are going to be doing live fly at White Sands Missile Range with the Army, live fly Yuma at the— with the Marine Corps, live with the Navy off the Gulf Coast, and

live with the Air Force at Nellis. So this is going to be a big demonstration, and we are doing this every 4 months to make sure that we bring this together for the entire joint team.

Mr. SCOTT. Well, I appreciate your comments, and thank you for your service. I just—make sure we are moving in that direction with the integration of all of the—all of the services as we develop this system.

General GOLDFEIN. Yes, sir.

Mr. KIM. Great. Thank you.

I am going to turn it over to Ms. Haaland for 5 minutes. Over to you.

Ms. HAALAND. Thank you, Chairman.

And, General Goldfein, Secretary Barrett, and General Raymond, welcome to our committee hearing.

I first want to say that I am appreciative of the conversation about women and people of color to find success in the ranks of our Armed Forces, specifically pilots. And as one of the first Native American women ever elected to Congress in our country's history, I completely understand when there is no role models to see in those areas, that it is hard for young women to believe that they can achieve those goals. So I feel like once we get it started, it will—it will change the trajectory of what we are trying to do. So I appreciate your commitment to seeing that through.

Secretary Barrett, I will start with you. You recently spoke about flat budgets being a reality the Department must face and that your OSD leadership have made it a priority to seek the best value for every dollar in the budget. In my own district, there are valuable resources not fully used, from empty ramp space, hangars and ops facilities, to talented citizen airmen that cannot deploy. There is untapped potential available to meet Air Force needs.

The New Mexico Air National Guard is currently organized with no aircraft assigned there. And over 300 airmen currently do not contribute to service readiness recovery efforts. In fact, more than a third of the airmen assigned to the 150th Special Operations Wing are in nondeployable billets with zero operational requirements. This issue has limited the New Mexico Air National Guard in developing the future commanders needed to lead the wing, and forced our State to look to other States to fill these roles.

Given your role in organizing, supplying, equipping, and training our brave airmen, what efforts are being made to identify Guard and Reserve capabilities that are currently underutilized throughout the Air Force?

Secretary BARRETT. Thank you, Ms. Haaland, for that comment. And let me just say on your first point that I am flanked by two people who really do care about people's capability, rather than whether it is what gender or what color people are. They are very—we happen to have leadership that is very caring and inclusive. So that is a help.

Ms. HAALAND. Yes.

Secretary BARRETT. On the topic of Guard utilization, that is a—I will have to get—take a closer look at it and get back with you on, especially the New Mexico utilization rates.

[The information referred to can be found in the Appendix on page 84.]

General GOLDFEIN. And can I just——

Secretary BARRETT. May I ask the chief to——

Ms. HAALAND. Yes, please.

General GOLDFEIN. Ma'am, I will just tell you that it should not be lost on you that probably one of the most important hires that we have made as an Air Force is our director of Legislative Liaison, who is here, Major General Select Chris Finerty, who is an Air National Guardsman, who speaks on behalf of the entire United States Air Force when we present to you our budget. I have stopped meetings—not many, because the word got out—I have stopped meetings in the Pentagon when I looked around and I did not see Lieutenant General Rice or the director of the Air National Guard or the commander of the Air Force Reserves in the meeting. We don't have meetings, especially on budget topics, if they are not in the room.

And so you have our commitment to ensure that this one Air Force is going to move forward together.

Ms. HAALAND. Thank you. I appreciate that.

And, General Goldfein, I will go next to you. I want to take a moment to talk about a group of airmen that I know are near and dear to your heart and your vision for the future of the Air Force special warfare missions.

As you know, our PJs [Pararescuemen] and combat rescue officers are elite warriors and the only U.S. force dedicated to combat search-and-rescue operations. They spend 2 years completing the rigorous training course after another to earn the maroon beret and the PJ distinction. They spend the bulk of that time training at Kirtland Air Force Base, which is also in my district. We are proud to be the home of the pararescue school and are eager to see their full campus, including a suitable range and operations facility, come to fruition.

What is your vision for the future of the special warfare community and the role of these elite airmen in Joint All-Domain Operations?

General GOLDFEIN. Well, ma'am, first of all, thanks for your advocacy for that group. I wouldn't be sitting here today if it weren't for them. You know, these things they do that others may live, I am one of them.

So our vision for the future is to ensure them that, quite frankly, they have what they need to succeed. But not only in the fight of today and the one we have been in for the last 19 years, but just as importantly, they are doing a lot of creative thinking right now on what does combat search and rescue look like in 2030. And it actually brings forward capabilities that we are doing some exciting work on.

And one of the individuals involved in that is our Chief of Acquisition, Dr. Will Roper, who is doing some really creative work building, actually, new industries out there, with bringing them in for pitch days, and for small business contracts so we can provide technology very quickly to our frontline warfighters.

Ms. HAALAND. Thank you so much.

And, Chairman, I yield.

Mr. KIM. Thank you.

I am going to turn it over to Mrs. Hartzler. Over to you for 5 minutes.

Mrs. HARTZLER. Great. Thank you very much.

And I want to be the last member of this committee to certainly wish you well, General Goldfein. It has been an honor to get to know you, and I appreciate your service, as well as your wife's and your family's, all this year. So hope that we will continue to see you and glean from your knowledge into the future. And I know the men and women and the airmen of Whiteman Air Force Base have appreciated your support as well.

And, Secretary Barrett and General Raymond, I look forward to continuing to work with you, and appreciate all of your service as well.

Wanted to talk about the mix that we discovered last year, and I supported, of fourth- and fifth-gen aircraft. And I know, General Goldfein, you had a quote last year, where you said, we are going to be mixed well in the 2030s of fourth-gen and fifth-gen fighters, and they complement each other, one plus one, fourth-gen plus fifth-gen actually equals three fighters, if they are used correctly, because they each make each other better. And I certainly agree with that.

However, now that we have seen the new budget, I was surprised to see a decrease of \$300 million and six F-15EX aircraft that were originally planned to be in this budget. So, I guess, do you still stand behind last year's comments about the benefits of both, and could you speak to the justification for decreasing those aircraft?

General GOLDFEIN. Yes, ma'am, I stand by that a hundred percent. And we are still committed to—we are committed to the F-35 program of record, and we are committed to the F-15EX program as well. A flat budget with 2 percent less spending capacity requires us to do some trades, and the F-15EX that you talked about were one of those trades.

Mrs. HARTZLER. Okay. Very good. Well, it is not very good, but I appreciate your explanation.

So one of my other colleagues mentioned a very important topic, and I know, Secretary Barrett, you weighed in as well, asked General Goldfein about how important it is that we go after the suicide problem. And I appreciate your attention to that. I just wondered if as you are looking at all the different options, if you are considering faith-based, nonprofit programs as part of the options for airmen who are in need of hope and healing. I have been looking at a lot of the different options to go after this problem, and I have been very encouraged by a lot of nonprofit organizations out there. They are doing amazing work with sometimes a hundred percent success rate for the individuals who go through these programs. And right now, I don't see those as being integrated into our military or made available to them. So are you exploring those options as well?

Secretary BARRETT. I will ask the chief to address it.

Mrs. HARTZLER. Sure.

General GOLDFEIN. Ma'am, I will tell you what, on this one, there is no bad idea. We are actually looking—we are looking everywhere. The Marine Corps has actually had—they have had an

interesting program that we are looking into now as well. And so as we go after this, and I say it again, suicide is an adversary, right? It has taken more airmen than any adversary on the planet.

We are attacking it primarily through engaged leadership at the unit level. We think that is where it is going to have the most impact. And so what we are doing with the tools that we are putting available is making sure at the local level that they have access to some of these best ideas. I would love to come by and talk to you about what you are seeing, and see if we can bring as many of these nonprofits into our businesses as possible. Because we got to keep it fresh and we got to keep it personal.

Mrs. HARTZLER. Yes, absolutely. And I think holistic, which these programs encompass, not just the mental and physical issues, but also the spiritual, or the heart. So, yeah, I look forward to that discussion.

Wanted to shift a little bit to what I learned last week on a CODEL out to Beale Air Force Base. And with my colleagues, Donald Norcross and John Garamendi, we met with the 9th Reconnaissance Wing and the 12th Reconnaissance Squadron who fly the Global Hawk, Block 20s and Block 30s. The budget request this year proposes to divest the entire fleet of Block 20 and Block 30 Global Hawks. So that is 4 and 20 systems, respectively, as you know. And I am concerned about the ISR risk that we may be accepting here. Because the Block 20s are critical communication gateways that are being used extensively, as you know, in CENTCOM [U.S. Central Command]. The Block 30s are conducting missions in almost every geographical region of the world.

So would you please elaborate on what is driving this decision to divest these critical ISR assets, and are there alternatives that we can use to address this loss in capacity, and how did you coordinate this decision with the combatant commands? In 10 seconds.

General GOLDFEIN. Yeah. Thanks, ma'am. So with the combatant commanders, I will just tell you that this is the tension that you always see. Combatant command has got about a 2-year problem that they got to fix, and they got real mission. And I am coming—I am looking at building an Air Force with Chief Raymond, Air and Space Force for 2030. So that tension is always there.

We are keeping the U-2 flying. You will see the money in there to sustain the U-2 flying for high-altitude operations. It has the size, weight, and power to be able to do even more things than it is doing today. We are buying capability on the classified side that I would like to come by and talk to you in a closed session, that offsets some of the risk.

And perhaps some of the most important work that we are doing is that every platform, sensor, or weapon that we field across all the services, not just the Air and Space Force, is a sensor, is a computer, and if we can connect them together, with common digital engineering and common data architecture, we actually get more capacity just by being more—getting more use out of what we have. All that comes together to be able to mitigate the risk.

General RAYMOND. As a combatant commander and a service chief, I feel that tension every day and I get to write myself letters and say, why did you do that? Because on the one hand, I am looking

at that near-term risk. On the other hat, we are looking to build and get to the future faster.

Mrs. HARTZLER. Okay. Thank you so much.

Mr. KIM. Great. Thank you.

Well, with no one else lined up for questions, I just wanted to take this time again to just thank the three of you for coming out here today. As you can see, a wide range of issues that we are excited to work with you on. And as someone who has worked alongside the Air Force for a number of years, it is just my great honor to continue to do so.

Again, just conclude by saying, General Goldfein, thank you so much for your service. I know you are going to desperately miss these types of hearings in your retirement, but I am just grateful for you coming out one more time and sharing your knowledge and expertise with us.

With no further business in front of the committee, we are now adjourned. Thank you.

[Whereupon, at 12:45 p.m., the committee was adjourned.]

A P P E N D I X

MARCH 4, 2020

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

MARCH 4, 2020

Department of the Air Force Posture Statement
Fiscal Year 2021

Department of the Air Force
Presentation to the Committees
And Subcommittees of the
United States Senate
And the House of Representatives
2nd Session, 116th Congress



Statement of:
The Honorable Barbara Barrett
Secretary of the Air Force

General David L. Goldfein
Chief of Staff, United States Air Force

General John W. Raymond
Chief of Space Operations, United States Space Force

NOT FOR PUBLICATION UNTIL RELEASED
BY THE HOUSE ARMED SERVICES COMMITTEE

Department of the Air Force Posture Statement
Fiscal Year 2021 President's Budget Request

Statement of:
The Honorable Barbara Barrett
Secretary of the Air Force

General David L. Goldfein
Chief of Staff, United States Air Force

General John W. Raymond
Chief of Space Operations, United States Space Force

AIR AND SPACE FORCE DESIGN FOR GREAT POWER COMPETITION

The international security environment is rapidly changing and becoming increasingly complex. China and Russia present real and growing threats to the national security of the United States and our allies. They continue to employ aggressive tactics to coerce neighbors, suppress dissent, and undermine freedom. Iran and North Korea seek outsized regional influence through violent extremism or the pursuit of nuclear weapons. These and other nations are pursuing capabilities specifically designed to limit or negate the advantages of the United States and our allies.

The 2018 National Defense Strategy (NDS) reoriented United States defense strategy to focus primarily on great power competition with China and Russia. This shift profoundly changes the conversation on U.S. defense strategy, plans, and programs. We are developing new operational concepts to focus on more fully integrating joint military capabilities across warfighting domains. We will employ U.S. military forces in more distributed ways as we build technologies to connect those forces into advanced battle networks.

The Department of the Air Force—now two equal military services: the U.S. Space Force and the U.S. Air Force—has been working to align with the NDS for several years. In 2018, we needed Congress' help to recover from the damaging effects of sequestration and halt declining readiness across the force. The NDS and Nuclear Posture Review (NPR) were also released in 2018, and the Department began to align future conventional and nuclear forces design with the guidance in these documents.

In 2019, we continued readiness recovery, making significant gains across multiple aircraft and spacecraft fleets and mission sets. The Department also worked with Congress to make essential decisions on two important programs—the Joint Surveillance Target Attack Radar System (JSTARS) and the Overhead Persistent Infrared (OPIR) satellite system—that set the tone for future modernization. The plan for recapitalizing these platforms had to change as they would not have survived in future conflict given the emerging threats. We moved away from developing large, vulnerable aircraft and satellite systems, and instead pursued the Advanced Battle Management System (ABMS) and Next-Generation OPIR. These systems are essential to robust Joint All-Domain Command and Control (JADC2) and the networked future force.

The Department's 2020 budget submission was our first informed by and focused directly on 2018 National Defense Strategy implementation. The demands this strategy placed on the Department drove Congress to ask: what forces are required to successfully execute the NDS? The *Air Force We Need* study assessed the baseline capacity required to meet NDS objectives, assuming current capabilities and concepts, at medium risk based on Combatant Commander Operational Plans and Timelines. We also made key organizational changes to drive toward future capabilities and concepts. Most significantly, the U.S. Space Force now stands as a co-equal branch of the military, the first new service branch since the Air Force was formed from the Army Air Corps in 1947.

In preparation for the 2021 submission, the Department of the Air Force conducted an exhaustive review of our portfolios and made hard decisions to better align with the NDS. Some choices required investments in the future at the expense of legacy platforms. In doing so, we will accept calculated short-term risk to pursue the Secretary of Defense's goal of irreversible momentum toward NDS implementation. We conducted multiple, complex wargame scenarios to assess alternative warfighting approaches against a peer adversary. We shared the results with Congress over the past year and talked openly about the implications for our Air and Space Forces. This 2021 budget reflects current analysis on the Air and Space Forces We Need for the future.

To achieve the objectives of the NDS, the Department of the Air Force will pursue an integrated design and field modernized forces that can:

- **Connect the Joint Force** so we can more seamlessly integrate as a Joint team,
- **Dominate Space** by defending our use of space while defeating hostile action,
- **Generate Combat Power** to blunt any attack against the U.S. or our allies, and
- **Conduct Logistics Under Attack** to sustain high-tempo operations as long as needed.

In each of these areas, we will work with Congress and our sister services, industry, academia, allies, and partners to develop and field innovative solutions. While focusing on the four key investment areas above, we will also continue to provide Combatant Commanders with **Ready Forces** to conduct **Strategic Deterrence, Homeland Defense, and Counter Violent Extremism**.

Finally, **Developing and Caring For Our People and Their Families** is an enduring imperative. American parents have entrusted their sons and daughters to our care. It is our sacred duty to ensure they are properly organized, trained, equipped, and courageously led. It is also our responsibility to take care of their families. With the enduring support of Congress, we will continue to provide them the resources and support they deserve.

DEPARTMENT OF THE AIR FORCE DESIGN PRIORITIES

CONNECT THE JOINT FORCE

Modern warfare is increasingly all-domain. Conflicts are not limited to the air *or* space *or* land *or* sea. Rather, they involve engagement in and effects across many or all domains, simultaneously. To prevail, the future joint force must be prepared to employ Joint All-Domain Operations (JADO), where individual military activities are more than synchronized or deconflicted. Instead, activities in one domain *enhance* the effectiveness of those in other domains and compensate for vulnerabilities.

Joint All Domain Operations as a new Joint Warfighting Concept creates simultaneous dilemmas for adversary forces, overwhelming them with too many threats to counter successfully. The Air Force and Space Force will generate windows of superiority in air, space, and cyberspace, with the joint force converging on the most important targets at speed and scale. When employed in concert with Army and Navy capabilities, opponents will have to defend their forces across all domains, all the time.

The Department of the Air Force will enable JADO by helping connect all forces into a cohesive battle network in ways they are not connected today. For example, our fifth-generation aircraft cannot easily share data with some legacy fighters, sensors on many Navy ships cannot cue Army Air Defense Artillery batteries, and Soldiers and Marines in battle cannot always access real-time video feeds from our international partners. The key to this effort is to build on our Advanced Battle Management System investments. ABMS is the foundation of true Joint All-Domain Command and Control which enables convergence of joint combat power. JADC2 connects sensors, systems, and weapons from different services and nations to allow the seamless sharing of information to all friendly forces. Our FY21 budget includes funding to develop the network, connectivity, and infrastructure for this critical capability while working closely with joint, interagency, and international partners.

The Department of the Air Force has been formally tasked by Secretary Esper to lead DoD-wide efforts to develop JADC2, and early experiments are already yielding positive results. A recent demonstration in Florida connected Air Force aircraft, Space Force sensors, Navy surface vessels, and Army Air Defense Artillery units to successfully defeat a simulated cruise missile attack. This joint team achieved 26 of 28 connectivity objectives and a series of firsts in this initial effort to effectively employ JADC2 in an operational setting directly supporting the Commander of USNORTHCOM/NORAD in defense of the homeland. This FY21 budget accelerates JADC2 experimentation, and the next demonstration is planned for April 2020.

To achieve true JADC2, this budget invests in digital engineering and common data architecture to connect not only Air and Space Forces but our Army, Navy, Marine Corps, and international teammates. Success in modern warfare requires a digital infrastructure with more open data systems than we have today. As part of these efforts, we will continue investments in the Digital Air Force initiative as we transition from in-house communications networks to an Enterprise Information Technology as a Service framework, using best practices of industry. This allows Air and Space professionals to focus more on warfighting and less on maintenance of our networks. The FY21 budget expands investments in technology solutions that streamline non-essential tasks for our Airmen and Space professionals.

DOMINATE SPACE

Maintaining a position of advantage in space is essential to winning in future conflicts. The President formally declared space a warfighting domain in March 2018 with the announcement of the new National Space Strategy.

On 20 December 2019, the President and Congress established the United States Space Force as the newest branch of the Armed Forces, an historic milestone for our nation. The standup of the U.S. Space Force is our **top** policy priority—we are aggressively developing the capabilities, warfighting doctrine, and expertise needed to outpace future threats. We are pursuing a Space Superiority Strategy to ensure we can deter hostile action, protect and defend our interests, and, when necessary, *fight in, through, and from* the space domain.

This budget submission includes increased investment in four elements of a Space Superiority Strategy:

- Protect and defend the highly-capable satellite systems that we depend on today and will for some period of time.
- Field robust and resilient space systems with a diverse architecture that will make it increasingly difficult for adversaries to benefit from an attack.
- Develop the space warfighters essential to winning in an increasingly contested and congested domain.
- Finally, to ensure a credible strategic deterrence posture, we must demonstrate the ability and the will to defend vital national interests across all domains, including space. Therefore, we will develop a broad range of offensive and defensive options to respond if our national security space capabilities are threatened.

Space Domain Awareness is the foundation upon which the Department maintains spaceflight safety, provides indications and warning, and assesses adversary intentions and actions towards U.S., allied, and commercial partner satellites. We are fusing data from national, civil, and commercial sensors to produce the most comprehensive space threat picture in history to protect and defend national security space systems. This budget continues investment in our new Space Fence radar system, which reached initial operational capability in early 2020. It will allow for revolutionary gains in the way we view space—faster and with greater clarity than ever before. More importantly, it will bring major improvements to the way the U.S. tracks and characterizes space debris and adversary space systems.

In addition to the Space Fence, this budget continues to invest in capabilities such as the Geosynchronous Space Situational Awareness Program (GSSAP) and the Deep-space Advanced Radar Capability (DARC) to provide unparalleled space surveillance, tracking, and threat characterization capability to the joint force. GSSAP and the future DARC system will support the Joint Task Force-Space Defense mission to protect and defend U.S. and allied space systems.

We are also developing the operating concepts and technology required to advance space warfighting. We do not seek a conflict in space. However, we must maintain a position of strength and develop a credible warfighting capability in order to deter conflict and maintain a full range of options to ensure our national security. The Space Force is taking the lead to preserve U.S. and allied space superiority across the continuum of conflict and to defend U.S. interests and those of our allies and

partners. While our adversaries coerce, we collaborate. The most effective deterrent to a war starting or extending into space is an international partnership with established norms of behavior. The U.S. Space Force is poised to lead this effort.

Over-classification of space systems and technology is a challenge we are continuing to work through. It is difficult to explain our investment strategy in an open forum when most of the systems are highly classified. We are eager to meet with Members and Staff to build a common understanding of both the strategy and the investments needed to win.

GENERATE COMBAT POWER

To prevail in future conflict, the joint force must generate sufficient combat power to blunt an attack against the U.S. or its allies. The Department will deliver rapid, lethal warfighting capability to Combatant Commanders. Air and Space Forces are expected to arrive first because we fly into theater or are established in geosynchronous orbits above. These forces are then called to halt enemy activity while follow-on joint and allied forces are brought to bear. This budget continues critical recapitalization across multiple missions to include the B-21, KC-46, F-35, F-15EX, HH-60W, and T-7 fleets along with the critical munitions and sensor suites required for Joint All-Domain Operations.

In addition, this budget modernizes existing platforms that will fly well into the next two decades. Examples include a modernized B-52 with new engines and upgraded radar technology and munitions delivery options; updated F-16s with advanced fire control radars and datalinks; and the venerable A-10 which will provide close air support to ground forces well into the 2030s. Connecting these platforms, sensors, and weapons through ABMS and JADC2 will maintain their viability and combat lethality.

The fighter force is one example of how this budget invests in a new way of generating combat power. The Next-Generation Air Dominance (NGAD) program is maturing novel technologies for the networked, multi-domain joint force. NGAD will integrate legacy and future platforms with a mix of manned, unmanned, and optionally-manned aircraft.

This budget continues to fund Air Force investments in the intelligence, surveillance, and reconnaissance (ISR) platforms, systems, and capabilities that enable current joint force operations. At the same time, it lays the foundation for an architecture that will eventually link sensors, shooters, and decision makers. The Air Force seeks to balance both near- and long-term risk by right-sizing the ISR available to dominate today's fight, while building the ISR enterprise necessary to provide decision superiority to the joint force in the future.

This budget takes full advantage of breakthroughs in digital design technology by investing in three critical areas: digital engineering, agile software development, and open systems architectures. Recent application of digital design technology in the T-7 program resulted in an 80% reduction in assembly hours versus conventional aircraft design and manufacturing methods. This engagement with industry will allow us to develop smaller fleets of new aircraft much faster with rapid technological innovation and adaptation. It is not good enough to procure better airplanes and satellites; rather, we must design and build systems differently today.

This budget submission pursues advanced technologies and incorporates them into our weapons and platforms. These technologies include **hypersonic, directed energy, autonomy, cyber, propulsion, mass weapon payload systems, and advanced space systems**. These future capabilities will complement existing systems to allow us to achieve effects against enemy targets, kinetically or non-kinetically, in all domains, at speed and scale previously unseen.

Even as we generate combat power in new ways, humans will still operate in many of our combat aircraft. This will place them in harm's way and potentially require their rescue from hostile areas. Recovering isolated personnel remains a no-fail mission, so we are continuing our efforts to modernize our rescue aircraft. In 2019, we began testing our first HH-60W aircraft. This budget continues acquisitions as we recapitalize the helicopter fleet. In 2021, we will retire the first 27 legacy HH-60 aircraft.

The U.S. Space Force will take the lead for the Department's efforts to generate combat power in, through, and from space. Assured access to all orbits is fundamental to sustaining the United States' freedom of action in space. The National Security Space Launch (NSSL) investments in this budget ensure space domain access for the joint warfighter. The Space and Missile Systems Center's next phase, the NSSL Phase 2 Launch Service Procurement contract, will provide continued mission success and flexibility in the contested space domain.

The Space Force's Range of the Future initiative will modernize our launch architecture with adaptive instrumentation, infrastructure, and services. This effort enables Autonomous Flight Safety System operations while fostering partnerships with industry and other nations.

Space forces supported 26 successful launch missions from our Eastern and Western launch ranges in 2019. Each day they tracked more than 24,000 objects in space, ensuring safety and security of U.S. and allied space assets. Further, U.S. Space Force missile launch detection and characterization systems provided critical early warning to U.S. forces in Iraq during the recent Iranian missile barrage, helping to mitigate friendly casualties and attribute responsibility for hostile actions. This budget continues investments in tracking, warning, classification, surveillance, and other critical capabilities.

The Department's experimental orbital test vehicle, the X-37, recently completed its fifth flight after spending 780 days in space, and the fleet has now logged 2,865 total days in orbit. We are employing this reusable, unmanned vehicle to develop advanced technologies and experiment with new operational concepts while reducing the risk to future missions.

CONDUCT LOGISTICS UNDER ATTACK

Since the end of World War II, the United States has relied on established, fully-supplied, and well-defended bases. Today, American forces are extremely efficient in deploying large numbers of people, materiel, and weapons systems across the globe to fight from a small number of forward operating bases with well-developed infrastructure.

Our assessment, in line with the NDS, indicates that future battlefields will not allow us to fight this way, so we must be prepared to *move to win*. The Air Force will invest in forward-based stocks to enable forces to rapidly deploy to distributed forward locations. These locations will vary in size, setup,

and security, so we must be postured to protect our forces and make it difficult for enemies to target them.

Logistics will need to be lean and agile, allowing us to rapidly move people and materiel to and within a theater. As we reinvent logistics, the Air Force is investing in future transportation platforms and autonomous capabilities. We will continue to develop and field future vertical lift to move smaller amounts of equipment quickly to many more places than in the past. In these efforts, we are closely engaged with our sister services and industry to reimagine what is possible. These capabilities will be integrated with our battle networks, so we are taking steps to reinforce supply chain security with the components, subcomponents, materials, and software incorporated into defense systems and equipment.

In addition to developing future capabilities, we will continue investing in our existing and modernized mobility aircraft fleets. The joint force will depend upon the KC-46 to provide force extension and power projection. The Air Force continues to work closely with the contractor to reach full mission-capable status. This budget retires sixteen KC-10s and thirteen KC-135s in FY21 while maintaining the required 479 tanker aircraft. We are also looking closely at the right mix between modernized and legacy tactical airlift platforms.

READY FORCES

The Department of the Air Force fields capabilities the United States relies upon every day, across the globe and in space. Air and Space professionals are always on duty: standing the watch in missile launch facilities; performing satellite control operations; conducting intelligence, surveillance, and reconnaissance missions; patrolling and defending the cyber domain; delivering nuclear command, control, and communications capabilities; and guarding our skies. As we modernize to counter growing threats, we must also ensure that forces remain ready and able to offer options to our Nation's leaders.

The demand for Department capabilities across the globe remains high. Over 28,000 Air and Space professionals deployed worldwide last year as part of the joint team to deliver America's air, space, and cyber power. In 2019, our service members flew more than 75,000 strike sorties and employed more than 11,000 weapons in Iraq, Syria, and Afghanistan. Mobility forces conducted more than 27,000 airlift and refueling sorties across the U.S. Central Command area of responsibility, offloading more than 590 million pounds of fuel and moving more than 226 million pounds of cargo. Department personnel deployed in support of NATO collective defense missions in Poland and the Baltic States, filled continuous bomber rotations in the U.S. Central Command and U.S. Indo-Pacific Command areas of responsibility, and brought humanitarian assistance to millions of people in need around the world.

Despite this operations tempo, a major success story over the past several years has been the improved readiness across our force following the harmful effects of sequestration. We have increased mission capable rates across our pacing squadrons—our most in-demand units—and are continuing our efforts across all fleets. This budget requests \$17 billion in sustainment and support for weapons systems and \$9 billion for 1.2 million flying hours to train and hone combat proficiency.

The Department is also expanding investment into harnessing the power of data and the efficiencies it brings to operations. Predictive maintenance initiatives have yielded faster and cheaper

maintenance for our C-5 and KC-135 fleets, and this budget expands the initiative to other aircraft. We are digitizing data from years of maintaining legacy platforms, such as the B-52, to preserve and extend some of our oldest aircraft.

In 2018, we faced major readiness deficits which negatively impacted the morale of our Air and Space professionals. With the support of Congress, we have made major improvements to readiness over the past three budget years and are now more ready than at any time in the last decade. The momentum is undeniable.

STRATEGIC DETERRENCE

Nuclear deterrence is the highest priority mission of the Department of Defense – our deterrent underwrites every U.S. military operation around the world and is the foundation and backstop of our national defense. As the steward of two-thirds of the nuclear triad and 75% of the nuclear command, control, and communications, the Department of the Air Force needs the continued support of Congress to maintain the nation's credible and effective strategic deterrent. This need is even more critical today, due to the on-going evolution and fielding of other countries' strategic nuclear capabilities, including hypersonic weapons, which continue to challenge U.S. and allied security.

America's strategic forces would fail without robust and secure nuclear command, control, and communications capabilities. The Space Force operates the Advanced Extremely High Frequency (AEHF) satellite constellation to provide protected tactical and strategic, nuclear-hardened communications for the President and other national security personnel. Also essential to strategic deterrence is our ability to deliver a resilient missile warning capability. The Next-Generation OPIR system is our pathfinder survivable next generation missile warning constellation. This program is currently on track to meet a 2025 requirement date, a timeline far faster than historical programs due to streamlined acquisition, competitive prototyping, and extensive reuse of mature satellite and sensor technologies.

The Air Force is making significant investments in modernization and recapitalization programs that address both delivery platforms and weapons. Modernized versions of existing weapons, such as guided bombs, and modern replacements for existing capabilities, such as the Long-Range Standoff Weapon, will be joined by new technologies that provide advanced capabilities to the joint force. These systems are being fielded on a tight schedule that depends on stable requirements and resources to ensure our national strategic deterrence mission does not fail.

The Minuteman Intercontinental Ballistic Missile weapon system has served as the bedrock of nuclear deterrence since 1962. However, this system's service life can no longer be extended. The Ground-Based Strategic Deterrent developed in this budget represents a modern, sustainable design with the capabilities to ensure the Nation maintains its most responsive leg of the nuclear Triad well into the 21st century.

Our nuclear-capable bomber force represents the most flexible leg of the nuclear triad. The Air Force's future bomber, the B-21 Raider, is proceeding on schedule and on cost, and the initial test aircraft is progressing toward first flight. The Raider will be the core of our future nuclear-capable bomber fleet, and we are committed to fully funding the program in its current development phase to

maintain our aggressive and critical timeline for bringing it online. Combined with the Long Range Standoff Weapon, investments in this budget for B-21 development and B-52 modernization will maintain America's capability to deter adversary aggression, assure allies, and project combat power across the full spectrum of conflict.

To modernize the nation's strategic and bomber forces, we propose an acceptable reduction in near-term capacity to increase overall capability. The B-1 fleet is nearing the end of its service life. For a period of time last year, only 12 of the 55 aircraft in the B-1 fleet were fully mission-capable. We propose retiring 17 B-1 aircraft in FY21 to invest in the most mission-capable bombers.

2020 is the Year of Integrated Base Defense, focusing on training and equipping our Airmen to defend bases as our primary power projection platforms as we guard our nation's critical installations and infrastructure. This FY21 budget continues developing and deploying the technology to fully integrate the command, control, and communications capabilities essential to effective base defense.

Congress has recognized the importance of modernizing U.S. nuclear forces after decades of deferred recapitalization and has fully funded these programs. We request continued support to modernize and sustain the Nation's nuclear deterrent.

HOMELAND DEFENSE

Our ready forces that support the homeland defense mission include radars and early warning systems, alert aircraft and aircrew, and supporting infrastructure. This FY21 budget invests across all these areas. The centerpiece of the overall Department of Defense budget, Joint All-Domain Command and Control, is the most essential investment we can make to enable the Commander USNORTHCOM/NORAD to have the situational awareness and the ability to bring joint all-domain capabilities to bear. We continue to partner with this team daily on the number one mission in the NDS: defense of the homeland.

The American way of life, including our \$19 trillion economy, depends on a wide array of space capabilities. This budget supports the Space Force's efforts to rapidly field a satellite communication capability to deliver flexible, resilient communications capabilities in support of Homeland Defense. The Global Positioning System (GPS) continues to provide critical position, navigation, and timing capabilities with signals that are three times more accurate and up to eight times more anti-jam resilient than previous generations. This helps ensure our forces across the globe can target and defeat threats at ranges that outstrip adversary weapons while providing civil services like the "blue dot" on smartphone map applications.

Defense of the homeland also involves defeating malicious threats online, where we must counter direct aggression as well as indirect sources of influence. Department of the Air Force cyber warriors are constantly at work, under the newly-reactivated 16th Air Force, to "Defend Forward" with actions to deter adverse action and defend friendly networks and information. We are also closely examining all friendly systems and capabilities to identify and mitigate potential cyber vulnerabilities and reduce the potential for adversary exploitation.

To successfully execute the Homeland Defense mission, the Air Force will continue upgrading limited numbers of existing aircraft to include modernizing the radars in some F-16s. These updated legacy aircraft will be complemented by new-build F-15EX aircraft which are significantly more capable and cost-effective than the F-15Cs they will replace, aircraft already many years past their designed specifications and no longer candidates for service life extensions. The F-15EX will help eliminate the gap between the fighter aircraft we have and the fighter aircraft we need while leveraging other nations' investments in updating the F-15 program. Ultimately, the Air Force must field a robust fighter force, anchored by the F-35, able to detect and defeat threats across a wide spectrum. Homeland defense requires a mix of 4th- and 5th-generation capabilities, and we are investing to achieve that future force.

Engagement across the globe also contributes to the Homeland Defense mission. As we build a network of partners, allies, and emerging security partners, we enlist help in deterring aggression and containing threats. We will continue to provide training and assistance to foreign nations through military equipment sales, training programs, and personnel exchanges. The Department of the Air Force remains committed to collaboration with key allies and partners, and we have accelerated and expanded combined participation in air and space operations, exercises, wargames, and education.

Residing at the intersection between the U.S. Homeland and two critical regions—Indo-Pacific and Europe—the Arctic is an increasingly vital region for U.S. national security interests. The Air Force has more missions and investments in this region than any other U.S. military service. The Department of the Air Force is a cornerstone of the Nation's defense in this region with installations positioned across Alaska, Canada, and Greenland and composed of large air bases, training complexes, and a constellation of more than 50 early-warning radars and missile defense facilities. We are continuing our investments to include the upcoming beddown of the F-35 at Eielson AFB, placing more 5th-generation aircraft in Alaska than anywhere else in the world. In addition to modernizing the world-class Joint Pacific Range Complex, we continue to build interoperability with Arctic allies and partners. Sustained future investment in modernized missile defense, enhanced space capabilities, and improved domain awareness will ensure the Joint Force can respond to contingencies in, and from, the Arctic.

COUNTER VIOLENT EXTREMISM

Countering violent extremist organizations (VEO) is a critical and complex mission that requires interagency and international cooperation. The military is one source of power available for this task, and the Department of the Air Force is at the leading edge of these efforts. Airmen of Air Force Special Operations Command (AFSOC) are engaged worldwide to counter VEOs. They are coordinating airstrikes, conducting direct action missions, employing munitions, and providing persistent armed overwatch and intelligence, surveillance, and reconnaissance capabilities.

We are also working to build partner capacity and help foreign forces combat VEOs in their own homelands. The Air Force, working with the Office of the Secretary of Defense, has split the Light Attack experiment into two separate but linked efforts. First, building on the FY19 approval to procure several AT-6 and A-29 aircraft, we are establishing two experimental detachments at Hurlburt Field and Nellis AFB. Using these aircraft as prototypes, we will continue development and fielding of a coalition-friendly battle network that increases interoperability and allied and partner contributions. Second, we will partner with U.S. Special Operations Command through our air component, AFSOC, to

build requirements and rapidly field armed overwatch aircraft to support ongoing and future counter-VEO and counter-terrorism missions.

These two efforts are complementary as the Light Attack experiment feeds technology and tactics, techniques, and procedures for this fight while we improve support for our Special Operations Forces engaged in combat operations. We appreciate the support of Congress as we continue this important work.

DEVELOPING OUR AIRMEN AND SPACE PROFESSIONALS

Our platforms and systems may be the best in the world, but our most valuable assets are our people. With the support of Congress, we have grown our force over the last three budget years by 7,820 Airmen on the way to an active force of 333,700 for a total force of 699,013 authorized end strength to include Active Duty, Guard, Reserve, and Civilian Air Force and Space Force professionals. Our FY21 budget adds 1,500 additional personnel in F-35 and refueling operations, maintenance, and combat support.

Additionally, we are currently developing detailed plans to transfer more than 6,000 personnel into the U.S. Space Force in FY21. We will continue developing this cadre of Space professionals across more than 15 career fields who will eventually form the core of a Space Force that will protect U.S. interests in space well into the future. During the transition, members eligible for transfer will be provided options, depending on their specialty code, their preferences, and Service needs.

In November 2019, we graduated our first USAF Weapons School Space Enlisted Advanced Instructor Class to help lead future space forces. SPACE FLAG exercises continue to provide groundbreaking training for our Space professionals, carrying the Department's legacy of realistic training into the newest service.

The Department of the Air Force is continuing our efforts to develop the joint leaders essential to our future force. In order to develop and promote the right kind of leaders, we have established criteria by which we assess performance and potential. Underpinned by a foundation of impeccable character, we ask of our leaders:

- How well do they accomplish their mission?
- How well do they lead their Airmen or Space professionals?
- How do they manage the resources they have been assigned?
- How have they improved their unit?

We have also reformed our promotion boards, expanding the Line category into six competitive sub-categories in order to better match personnel with requirements. Furthermore, we are eliminating below the primary zone promotions to better align the experience and rank of our officer corps with those of our sister services while allowing our leaders more time to develop the excellence and expertise they will need.

Diverse, resilient, and ready Airmen and Space professionals are the bedrock of the Department's readiness and lethality. We are continuing efforts to increase representation of diverse

service members through a number of initiatives. These include the Rated Diversity Improvement Strategy, the Air Force Junior ROTC Flight Academy, recruiting efforts at Historically Black Colleges and Universities, and the Aviation-Inspiration-Motivation (AIM) High Outreach Program which engages young females through interaction with Air and Space Force role models. Increasing the overall diversity of our force is a warfighting imperative, and we are committed to fielding and developing diverse Air and Space Forces.

CARING FOR OUR PEOPLE AND THEIR FAMILIES

While we develop our people, we must also care for them and their families. The Department of the Air Force, along with our sister services, continues to address numerous challenges. These include suicide and sexual assault, aircrew retention, personnel retraining, spouse employment opportunities, quality of schools and Privatized Military Housing, and PFAS issues affecting our installations and the communities that host them.

Suicide and sexual assault continue to be insidious threats to our force. Suicide devastates families and units, and it affects the entire Department. Sexual assault is a crime against a fellow Airman or Space professional, one which is unacceptable and unthinkable. We will continue to devote resources and invest in programs, such as the True North initiative, which are designed to increase resiliency and connectedness among our Airmen and Space professionals. We will reinforce a culture of dignity and respect where our people feel protected, valued, and supported.

Shortages across our aircrew career fields persist as threats to readiness. We have seen signs of progress in addressing these complex and critical issues, but much work remains. We must increase production, absorption, and retention of aircrew and their families. The Air Force is employing lessons learned from Pilot Training Next, now in its 3rd major iteration, to streamline undergraduate pilot, combat systems officer, and air battle manager training programs.

Absorbing new aircrew into mission-ready units and providing necessary experience remains a challenge. Total Force partnerships help us place newly-trained members in highly-experienced units as we strive to balance experience levels across the force. These efforts require retaining aircrew, especially pilots, in higher numbers than in recent years. We are expanding the Career Intermission Program to provide flexibility and choice to our aircrews as they reach critical career decision points.

Our investments in this budget will involve some mission changes for some units, to include our Reserve and Air National Guard forces. Aircraft type or mission changes will require new skills, and we are committed to retaining and retraining personnel as we adjust capabilities. We are expanding efforts to ease transitions from Active to Reserve and Guard components, allowing increased flexibility along a continuum of service. Even with changing aircraft or missions, there are no plans to inactivate any wings at this time.

Air and Space professionals could not make the necessary sacrifices to serve without the support of their families, and the Department is making investments to address crucial quality of life concerns. Alongside our sister services, we will continue to advocate for reciprocal professional licensing for spouses and improved quality of schools. We have recently implemented the Support of Military

Families initiative, which will explicitly consider such issues when the Department of the Air Force makes basing decisions.

A vital part of caring for our Airmen and Space professionals and their families is providing a safe, secure environment for them to live and work. We are addressing serious challenges with Military Privatized Housing and have directed considerable resources toward correcting substandard living conditions. This budget increases manning at the base level, providing personnel required for proper oversight of our Project Owners and advocacy for our residents. We will also continue to address the root causes of mold or moisture issues in many of our housing units. Along with our sister services, we are preparing to institute a Privatized Housing Tenants' Bill of Rights to further empower residents. We are committed to regaining the trust of families who have been let down, and we will continue this work for as long as it takes to get it right.

PFAS is a national issue that requires national solutions. The Department has already spent \$447.5M identifying, investigating, and responding to PFAS releases; taken drinking water response actions at 23 installations to improve safety; and completed 165 of 189 required CERCLA PFAS Site Inspections. To enable our continued work, this budget requests \$304 million for the Environmental Restoration program as part of the total \$851 million Environmental Program request at Active and Guard bases.

MOVING FORWARD

The message of the National Defense Strategy is crystal clear: a more lethal, resilient, and rapidly innovating Joint Force, combined with a robust constellation of allies and partners, will sustain American influence and ensure favorable balances of power that safeguard the free and open international order. Failure to meet our defense objectives will result in decreasing U.S. global influence, eroding cohesion among allies and partners, and a loss of military advantage.

To align the U.S. Air Force and U.S. Space Force with this direction, we are putting forward an aggressive budget based on a new blueprint for joint warfighting. Joint All Domain Operations and the command and control networks required to connect the joint team form the centerpiece of this strategy. If we are to achieve the vision of the NDS, the joint force must fight together and deliver all-domain capabilities in a way that overwhelms our adversaries. We must acknowledge that all global military operations are connected to and rely on a safe, secure, and effective nuclear arsenal. We appreciate Congress' support with on-time budgets and the willingness to take prudent near-term risk to build a winning, networked force of the future. With this budget, the Department of the Air Force makes significant contributions to achieving irreversible momentum toward implementing the National Defense Strategy.

Barbara M. Barrett
Secretary of the Air Force

Barbara M. Barrett is the 25th Secretary of the Air Force and leads the affairs of the Department of the Air Force, comprising the U.S. Air Force and U.S. Space Force. She is responsible for organizing, training, equipping and providing for the welfare of 685,000 active duty, Guard, Reserve and civilian Airmen and their families. She oversees the department's annual budget of more than \$205 billion. As Secretary, she directs strategy and policy development, risk management, weapons acquisition, technology investments and human resource management across the global enterprise. As the department's senior leader, Secretary Barrett implements decisions of the President, Congress and fulfills Combatant Commanders' operational requirements.

Secretary Barrett has served in senior leadership positions in public service, the private sector and academia. Before she was 30, she was an executive with two global Fortune 500 companies. Secretary Barrett's key leadership roles include her time as the U.S. Ambassador to Finland, Deputy Administrator of the Federal Aviation Administration and President of the Thunderbird School of Global Management. She also taught leadership as a Harvard Fellow at the Kennedy School of Government. Prior to assuming her current position, Secretary Barrett was the Chairman of the Board for the Aerospace Corporation.

She has served as a board member for multiple organizations focused on diplomacy, defense, aeronautics, science and space. She was a Senior Advisor to the U.S. Mission to the United Nations, a member of the Defense Advisory Committee on Women in the Services, the Defense Business Board and the U.S.-Afghan Women's Council. She has chaired groups that include the U.S. Advisory Commission on Public Diplomacy, the U.S. Commerce Secretary's biennial Export Conference and the U.S. Department of State's Women's Economic Empowerment Working Group.

She is an instrument-rated pilot and was trained and certified for space flight. Additionally, she has been a cattle and bison rancher for close to three decades.

Secretary Barrett earned her bachelor's, master's and law degrees at Arizona State University.

EDUCATION

1972 Bachelor of Science, Liberal Arts, Arizona State University, Tempe
 1975 Master of Public Administration, International Business, Arizona State University, Tempe
 1978 Juris Doctor, Arizona State University, Tempe

CAREER CHRONOLOGY

1973–1975, Personnel Director, Yavapai Regional Medical Center, Prescott, Ariz.
 1976–1980, Attorney, Greyhound Corporation, Phoenix
 1980–1982, Associate General Counsel, Assistant Secretary, Southwest Forest Industries, Phoenix
 1982–1985, Vice Chairman, U.S. Civil Aeronautics Board, Washington, D.C.
 1985–1988, 1989–1990, Partner, Evans, Kitchel and Jenckes, Phoenix
 1988–1989, Deputy Administrator, Federal Aviation Administration, Washington, D.C.
 1994–present, Owner and CEO, Triple Creek Guest Ranch, Darby, Mont.
 1997–1998, CEO, American Management Association, New York
 1999, Fellow at the Kennedy School of Government, Harvard University, Cambridge, Mass.
 1999–2001, President, International Women's Forum, Washington, D.C.
 2006 Senior Advisor, U.S. Mission to the United Nations, New York
 2008–2009, U.S. Ambassador to Finland, U.S. Department of State, Helsinki
 2012 Interim President, Thunderbird School of Global Management, Glendale, Ariz.
 2013–2017, Chairman of the Board, the Aerospace Corporation, El Segundo, Calif.
 2019–present, Secretary of the Air Force, the Pentagon, Arlington, Va.

MAJOR AWARDS AND DECORATIONS

Horatio Alger Distinguished Americans Award
 The Secretary of Defense Medal for Exceptional Public Service
 Sandra Day O'Connor Board Excellence Award from the American Bar Association
 Inducted into the Arizona Aviation Hall of Fame
 Committee for Economic Development Leadership in the Nation's Interest Award

OTHER ACHIEVEMENTS

Honorary Doctorate, Arizona State University
 Honorary Doctorate, Embry-Riddle Aeronautical University
 Honorary Doctorate, Thunderbird School of Global Management
 Honorary Doctorate, University of South Carolina
 Honorary Doctorate, Pepperdine University
 Honorary Doctorate, Finlandia University

(Current as of December 2019)

General David L. Goldfein

Gen. David L. Goldfein is Chief of Staff of the U.S. Air Force, Arlington, Va. As Chief, he serves as the senior uniformed Air Force officer responsible for the organization, training and equipping of 685,000 active-duty, Guard, Reserve and civilian forces serving in the United States and overseas. As a member of the Joint Chiefs of Staff, the general and other service chiefs function as military advisers to the Secretary of Defense, National Security Council and the President.

Prior to assuming his current position, General Goldfein was the Vice Chief of Staff of the U.S. Air Force, where he presided over the Air Staff and served as a member of the Joint Chiefs of Staff Requirements Oversight Council and Deputy Advisory Working Group. Before serving as the Vice Chief, General Goldfein was the Director, Joint Staff, the Pentagon, Arlington, Va.

General Goldfein received his commission from the U.S. Air Force Academy in 1983. He is a graduate of the U.S. Air Force Weapons School and is a command pilot with more than 4,200 flying hours in the T-37, T-38, F-16C/D, F-117A, MQ-9 and MC-12W. He has flown combat missions in operations Desert Shield, Desert Storm, Allied Force and Enduring Freedom.

General John W. “Jay” Raymond

Gen. John W. “Jay” Raymond assumed the duties as the first Chief of Space Operations, United States Space Force, Dec. 20, 2019; and Commander, United States Space Command, Aug. 29, 2019.

U.S. Space Force is responsible for providing resilient, defendable and affordable space capabilities for the nation and the joint force. It is the duty of the U.S. Space Force to protect the interests of the United States in space; deter aggression in, from and to space; and conduct prompt and sustained space operations. As the Chief of Space Operations, U.S. Space Force, Gen. Raymond leads the organizing, training, equipping and maintaining of mission-ready space forces and capabilities for U.S. Space Command and other combatant commands around the world. The Chief of Space Operations performs the duties of such position under the authority, direction and control of the Secretary of the Air Force and is directly responsible to the Secretary.

U.S. Space Command is one of 11 unified commands under the Department of Defense and is responsible for deterring conflict, defending U.S. and allied freedom of action in the space area of operations, delivering combat-relevant space capability to the joint/combined force and developing space forces to advance U.S. and allied interests in, through and from the space domain. As the Commander of U.S. Space Command, Gen. Raymond directs assigned and attached joint space forces providing tailored, responsive, theater and global space effects in support of national objectives.

Gen. Raymond was commissioned through the ROTC program at Clemson University in 1984. He has commanded the 5th Space Surveillance Squadron at RAF Feltwell, United Kingdom, the 30th Operations Group at Vandenberg Air Force Base, California, the 21st Space Wing at Peterson AFB, Colorado, the 14th Air Force and Joint Force Space Component Command. He deployed to Southwest Asia as Director of Space Forces in support of operations Enduring Freedom and Iraqi Freedom. Gen. Raymond’s staff assignments include Headquarters AFSPC, U.S. Strategic Command, the Air Staff and the Office of the Secretary of Defense.

Prior to assuming command of U.S. Space Force and U.S. Space Command, Gen. Raymond was Commander, AFSPC, Peterson AFB, Colorado.

EDUCATION

1984 Bachelor of Science, Administrative Management, Clemson University, Clemson, S.C.
 1990 Squadron Officer School, Maxwell Air Force Base, Ala.
 1990 Master of Science, Administrative Management, Central Michigan University, Mount Pleasant
 1997 Air Command and Staff College, Maxwell AFB, Ala.
 2003 Master of Arts, National Security and Strategic Studies, Naval War College, Newport, R.I.
 2007 Joint Forces Staff College, Norfolk, Va.
 2011 Combined Force Air Component Commander Course, Maxwell AFB, Ala.
 2012 Joint Flag Officer Warfighting Course, Maxwell AFB, Ala.

ASSIGNMENTS

August 1985–October 1989, Minuteman Intercontinental Ballistic Missile Crew Commander; Alternate Command Post; Flight Commander and Instructor Crew Commander; and Missile Procedures Trainer Operator, 321st Strategic Missile Wing, Grand Forks Air Force Base, N.D.
 October 1989–August 1993, Operations Center Officer Controller, 1st Strategic Aerospace Division, and Executive Officer, 30th Space Wing, Vandenberg AFB, Calif.
 August 1993–February 1996, Chief, Commercial Space Lift Operations, Assistant Chief, Current Operations Branch, Headquarters Air Force Space Command, Peterson AFB, Colo.
 February 1996–August 1996, Deputy Director, Commander in Chief’s Action Group, Headquarters

AFSPC, Peterson AFB, Colo.

August 1996–June 1997, Student, Air Command and Staff College, Maxwell AFB, Ala.

June 1997–August 1998, Space and Missile Force Programmer, Headquarters U.S. Air Force, the Pentagon, Arlington, Va.

September 1998–April 2000, Chief, Expeditionary Aerospace Force Space and Program Integration, Expeditionary Aerospace Force Implementation Division, Headquarters U.S. Air Force, the Pentagon, Arlington, Va.

April 2000–June 2001, Commander, 5th Space Surveillance Squadron, RAF Feltwell, United Kingdom

June 2001–July 2002, Deputy Commander, 21st Operations Group, Peterson AFB, Colo.

July 2002–June 2003, Student, Naval War College, Newport, R.I.

June 2003–June 2005, Transformation Strategist, Office of Force Transformation, Office of the Secretary of Defense, the Pentagon, Arlington, Va.

June 2005–June 2007, Commander, 30th Operations Group, Vandenberg AFB, Calif. (September 2006–January 2007, Director of Space Forces, Combined Air Operations Center, Southwest Asia)

June 2007–August 2009, Commander, 21st Space Wing, Peterson AFB, Colo.

August 2009–December 2010, Director of Plans, Programs and Analyses, Headquarters AFSPC, Peterson AFB, Colo.

December 2010–July 2012, Vice Commander, Fifth Air Force, and Deputy Commander, 13th Air Force, Yokota Air Base, Japan

July 2012–January 2014, Director of Plans and Policy (J5), U.S. Strategic Command, Offutt AFB, Neb.

January 2014–August 2015, Commander, Fourteenth Air Force (Air Forces Strategic), AFSPC, and Commander, Joint Functional Component Command for Space, U.S. Strategic Command, Vandenberg AFB, Calif.

August 2015–October 2016, Deputy Chief of Staff, Operations, Headquarters U.S. Air Force, the Pentagon, Arlington, Va.

October 2016–December 2019, Commander, AFSPC, Peterson AFB, Colo.

August 2019–present, Commander, U.S. Space Command, Peterson AFB, Colo.

December 2019–present, Chief of Space Operations, U.S. Space Force, Peterson AFB, Colo.

SUMMARY OF JOINT ASSIGNMENTS

June 2003–June 2005, Transformation Strategist, Office of Force Transformation, Office of the Secretary of Defense, Arlington, Va., as a colonel

July 2012–January 2014, Director of Plans and Policy (J5), U.S. Strategic Command, Offutt Air Force Base, Neb., as a major general

December 2017–August 2019, Commander, Joint Force Space Component Command, Peterson AFB, Colo., as a general

August 2019–present, Commander, U.S. Space Command, Peterson AFB, Colo., as a general

MAJOR AWARDS AND DECORATIONS

Distinguished Service Medal with oak leaf cluster

Defense Superior Service Medal with oak leaf cluster

Legion of Merit with oak leaf cluster

Meritorious Service Medal with four oak leaf clusters

Air Force Commendation Medal

French Order of Merit

OTHER ACHIEVEMENTS

2007 General Jerome F. O'Malley Distinguished Space Leadership Award, Air Force Association

2015 Thomas D. White Space Award, Air Force Association

2016 Peter B. Teets Government Award, National Defense Industrial Association

2017 James V. Hartinger Award, National Defense Industrial Association

EFFECTIVE DATES OF PROMOTION

Lieutenant July 20, 1984

First Lieutenant July 20, 1986

Captain July 20, 1988

Major July 1, 1996
Lieutenant Colonel July 1, 1999
Colonel July 1, 2004
Brigadier General Aug. 1, 2009
Major General May 4, 2012
Lieutenant General Jan. 31, 2014
General Oct. 25, 2016

(Current as of December 2019)

**WITNESS RESPONSES TO QUESTIONS ASKED DURING
THE HEARING**

MARCH 4, 2020

RESPONSE TO QUESTION SUBMITTED BY MS. SPEIER

General GOLDFEIN. The Air Force has and remains committed to pursuing advanced manufacturing technologies including 3-D printing to improve readiness and reduce cost. The SecAF stood up the Rapid Sustainment Office (RSO) July 2018 for this very purpose. We will continue to push the envelope in 3-D printing during our first Advanced Manufacturing Olympics virtual event in November 2020, which will focus on bringing together a broad community from industry, academia, and government to compete in technical challenges to solve the Air Force's most significant manufacturing issues, with a heavy focus on 3-D printing. With specific regard to 3-D printers, the Air Force has 120 large scale printers spread across our depots, flight lines and labs collectively capable of printing metal, polymer and composite materials. We leverage these 3-D printers to mitigate spare parts challenges and to locally manufacture readiness enabling tooling and fixtures for our depots and flight lines. To date, we have delivered 1,436 parts. In addition, to foster innovation at the level of command that makes the greatest impact, Squadron Innovation Funds (SIF) are in place so commanders can tackle their most pressing readiness challenges. In many cases, Squadron Innovation Funds are being used in "Spark Cells" at bases across the Air Force to purchase low lot production 3-D printers. [See page 45.]

RESPONSE TO QUESTION SUBMITTED BY MR. WALTZ

General RAYMOND. As you correctly assert, our nation's space-based advantages are at risk. We also recognize it is impossible to accomplish our space missions alone. Military, civil, and commercial space cooperation is a critical element of our efforts to organize, train, equip, and present space forces that will deter adversary action in space and if necessary, fight and win in that domain. The U.S. Space Force has a well-established and strong partnership with NASA which includes routine engagements to establish priorities and areas of collaboration. NASA's ability to operate in a highly contested environment is supported by our space domain awareness and assured access to space efforts. Space domain awareness is the foundation upon which the Department maintains spaceflight safety, provides indications and warning, and assesses adversary intentions. The FY21 budget request continues investment in our new Space Fence radar system which declared initial operational capability on 27 March 2020. Once fully operational, Space Fence will improve accuracy and the timely detection of space threats to assets in space, such as GPS satellites and the International Space Station. Assured access to space is fundamental to sustaining our freedom of action in space and the Space Force has taken the lead in advocating for National Security Space Launch investments in the FY21 budget request. While our priority remains ensuring the Nation can launch all national security space payloads, our strategy includes ensuring this essential element of space power is also available for civil, commercial, scientific, and exploratory purposes. An area we see ripe for future collaboration is on developing responsible norms of behavior for the space domain. Once developed, these norms will help both NASA and the Space Force operate safely and effectively in a congested and contested domain. [See page 48.]

RESPONSE TO QUESTION SUBMITTED BY MR. BROWN

General GOLDFEIN and General RAYMOND. Congressman, thank you for the question. To maintain the Air Force's agility, combat power, and dominance we must meet hard challenges with creative solutions. A world of multi-domain operations requires that our rated force (pilots, combat systems officers, air battle managers, and remotely piloted aircraft pilots) is diverse and has leaders with a diverse background, experiences, and thoughts who can see the challenges from different perspectives. Accessing people from differing backgrounds provides broader range of tools and knowledge to maintain readiness. The Rated Diversity Improvement (RDI) Strategy and Action Plan encompass 17 initiatives to improve diversity and inclu-

sion across the rated lifecycle. The programs tap currently unused resources of potential recruitment, which could relieve the aircrew manning shortage. Our accessions team is currently partnering with professional organizations such as the Organization of Black Aerospace Professionals (OBAP) and Women in Aviation (WAI) as exclusive partners of the Air Force. Moreover, we are targeting Historically Black Colleges and Universities (HBCU) and Hispanic Servicing Institutions (HSI), encouraging students at these schools to explore aviation programs. ROTC detachments are emphasizing aviation degrees as well as exposing students to all of the rated opportunities the Air Force has to offer. The Air Force is committed to eliminating barriers to rated service for underrepresented groups (URG). We are assessing the tools we use to select those for rated service and adjusting these tools in order to eliminate barriers to rated service. Further, we have developed the Rated Preparation Program (RPP) which encourages current Air Force officers who have little or no flying hours the ability to team up with Civil Air Patrol (CAP) to gain aviation experience with the goal of becoming a rated officer. These programs, among others (like expanding Junior ROTC and CAPs outreach to underrepresented groups), helps increase diversity within the Air Force's rated community, ultimately creating a stronger force to support national defense needs. We look forward to continuing to work with you and the committee to build on the success of these programs. [See page 29.]

RESPONSE TO QUESTION SUBMITTED BY MS. HAALAND

Secretary BARRETT. The New Mexico Air National Guard's 150th Special Operations Wing continues to be a vital partner with the Active Component's 58th Special Operations Wing at Kirtland. The training and qualification the 150th provides to our Total Force Special Operations and Rescue aircrews directly impacts the manning and readiness of those field units. On average, they produce >33% of the combined training output for three weapons systems with only ~20% of the instructor manning. As we continue to re-design our force to meet the requirements of the National Defense Strategy, we remain fully committed to exploring Total Force solutions for any of our operational mission decisions. [See page 52.]

QUESTIONS SUBMITTED BY MEMBERS POST HEARING

MARCH 4, 2020

QUESTIONS SUBMITTED BY MR. CONAWAY

Mr. CONAWAY. Secretary Barrett, I am concerned about the future of C-17 Globemaster sustainment. The current sustainment arrangement is a model program which has delivered 80%+ mission capable rates every year for more than 20 years, in a true partnership between the contractor and the air logistics center at Warner Robins. Currently, half or more of the USAF fleet depot level heavy maintenance is performed by the depot, with the contractor augmenting and additional heavy maintenance capabilities in San Antonio, Texas. I understand that the Air Force is considering a change to the sustainment strategy for C-17 and concluded a business case analysis last year.

The USAF provided HASC a briefing last year of that analysis that showed the considered change would have a lower quantitative performance score than the current sustainment arrangement and why is USAF contemplating a change they acknowledge will reduce mission capable rates on a platform that has maintained or exceeded these 80% rates for more than 20 years. What are the projected mission capable rates each year for the lifecycle of the aircraft under the contemplated change? To your knowledge were TRANSCOM and the Guard meaningfully consulted in the business case analysis? Why does the USAF believe that moving all USAF fleet depot level heavy maintenance organic would be cheaper?

Secretary BARRETT. In 2019, the Air Force completed a Product Support Business Case Analysis which suggested that moving more heavy maintenance from the contractor's maintenance location to the Air Logistics Complex at Warner Robins could result in \$7.2B savings across the program's life cycle. No changes that would degrade materiel readiness were considered, as the ground rules for the analysis required all courses of action must maintain current or improve C-17 virtual fleet performance (USAF and partner fleets). The Air Force's Air Mobility Command represented the user throughout the Product Support-Business Case Analysis effort. AMC is the air component of the U.S. Transportation Command and is responsible for a Total Force effort to execute Rapid Global Mobility and enable Global Reach missions. The C-17 program office continues to assess feasibility of implementing any changes to the system's product support strategy.

QUESTIONS SUBMITTED BY MR. LAMBORN

Mr. LAMBORN. Space lift is an integral piece of the Space Force's warfighting architecture. I have a two-part question.

First, understanding the National Security Space Launch Phase 2 program is currently in source selection can you please provide this committee a status of the acquisition?

Second, do you remain confident this acquisition adequately provides for the Space Forces launch requirements?

Secretary BARRETT and General RAYMOND. The National Security Space Launch (NSSL) Phase 2 source selection is scheduled to conclude and award two requirements contracts in the summer of 2020. We remain confident this acquisition adequately provides for the Space Force launch requirements. For the first time in 20 years, the USSF will be able to meet all NSSL needs through competitively awarded contracts to commercial launch services.

QUESTIONS SUBMITTED BY MR. GRAVES

Mr. GRAVES. The Air Force is reducing its unmanned capabilities across the fleet in MQ-9, EQ-4, and RQ-4 assets. These currently support a great deal of ISR and strike capability, as demonstrated throughout the last decade and in recent news. These capable assets are being reduced and removed in apparent favor of manned platforms which can produce a similar capability across a significantly shorter window. This shortened window is affected by many human factors—an important note since approximately 90% of current ISR requests are unmet, and combatant commanders rely heavily on the current fleet. This intended plan includes the exposure

of human life, which has been evidenced through the recent EQ-11 crash in Afghanistan; it also incurs greater costs in flight hour expenses, shutdown of unmanned lines and finality to any further acquisition, and additional personnel, acquisition, modernization, lifecycle, engineer, and training costs for replacing programs.

Given this, I have three questions.

1. How does the Air Force intend to meet the high volume of requested support from Combatant Commanders with a reduction in the MQ-9 lines being flown from 70 to 60?

2. How will the MQ-9 continue to fly through the next decade—and beyond—with no replacement aircraft or support from the industry line, and what will fill the gap left by mishap aircraft and aircraft approaching service life limits?

3. How will the department mitigate human factors such as crew day and the potential for physiological episodes while expanding manned aviation into areas previously not vulnerable to this factor?

Secretary BARRETT and General RAYMOND. 1. The Air Force decision to end the 10 Government Owned, Contractor Operated (GOCO) combat lines is based on reprioritization of capabilities identified in the 2018 National Defense Strategy and Service direction to implement the Next Generation ISR Dominance Flight Plan. The Next Generation ISR Dominance Flight Plan “seeks an integrated, balanced portfolio. To meet the challenges of a highly contested environment, the future ISR portfolio will consist of a multi-domain, multi-intelligence, government/commercial-partnered collaborative sensing grid that utilizes advanced technology.” Combatant Command ISR requirements will be addressed through a mixture of national, airborne, space, OSINT, and other capabilities in development.

2. The MQ-9A will continue to deliver multi-role capabilities with the current fleet beyond the FYDP, while the Air Force evaluates how to deliver the multi-role capabilities for future requirements. At this time, no platform has been identified to replace the MQ-9A whether remotely piloted or manned, but the Air Force is exploring options to replace this capability. Pending Congressional approval, the Air Force will end MQ-9 aircraft procurement in FY21, with final MQ-9A aircraft deliveries anticipated in FY24, based on reprioritization of capabilities identified in the 2018 National Defense Strategy. This shift in aircraft quantities does not change the Air Force’s approach to addressing the NDS. The FY21 PB maintains a 60 Government-Owned Government-Operated (GOGO) MQ-9 combat line force structure while it ends the Government-Owned Contractor-Operated (GOCO) MQ-9 program. Ending the MQ-9 GOCO program returns those government owned aircraft, ground stations and support equipment to the MQ-9 Program of Record (PoR) and reduces MQ-9 PoR out-of-hide maintenance and sustainment costs.

3. As the USAF looks at replacement capabilities for the MQ-9, the Next Generation ISR Dominance Flight Plan highlights the “need to repurpose and retool traditional ISR capabilities with disruptive technologies, non-traditional assets, sensors, and a hybrid force of 5th/6th generation capabilities. This will enhance warfighting capability across the global reach, power and vigilance tenets.” The only remotely piloted platform the Air Force is replacing with a manned platforms in the FY21 budget is outside of the ISR portfolio, where the Air Force will consolidate the battlefield airborne communications node (BACN) mixed fleet of EQ-4 and E-11A into a fleet of just E-11A. To do so, the BACN program is retiring the EQ-4 remotely piloted aircraft in favor of the E-11A manned platform, which is more suited to the mission and flies the majority of BACN support today. The typical E-11A sortie duration is limited to 12 hours or less and they never exceed the 16 hour max crew duty day. To further mitigate the human factor risks within the BACN program, the USAF outfits the E-11A with cutting-edge avionics and automation systems to reduce pilot workload. Additionally, the USAF is emphasizing training to identify and neutralize the human factor threats. At this time, no platform has been identified to replace the MQ-9A whether remotely piloted or manned. Furthermore, there is no planned expansion of manned aviation to replace the RQ-4 Block 30.

Mr. GRAVES. The Air Force is reducing its unmanned capabilities across the fleet in MQ-9, EQ-4, and RQ-4 assets. These currently support a great deal of ISR and strike capability, as demonstrated throughout the last decade and in recent news. These capable assets are being reduced and removed in apparent favor of manned platforms which can produce a similar capability across a significantly shorter window. This shortened window is affected by many human factors—an important note since approximately 90% of current ISR requests are unmet, and combatant commanders rely heavily on the current fleet. This intended plan includes the exposure of human life, which has been evidenced through the recent EQ-11 crash in Afghanistan; it also incurs greater costs in flight hour expenses, shutdown of unmanned lines and finality to any further acquisition, and additional personnel, acquisition, modernization, lifecycle, engineer, and training costs for replacing programs.

a. How does the Air Force intend to meet the high volume of requested support from Combatant Commanders with a reduction in the MQ-9 lines being flown from 70 to 60?

b. How will the MQ-9 continue to fly through the next decade—and beyond—with no replacement aircraft or support from the industry line? What will fill the gap left by mishap aircraft and aircraft approaching service life limits?

c. How will the department mitigate human factors such as crew day and the potential for physiological episodes while expanding manned aviation into areas previously not vulnerable to this factor?

General GOLDFEIN. 1. The Air Force decision to end the 10 Government Owned, Contractor Operated (GOCO) combat lines is based on reprioritization of capabilities identified in the 2018 National Defense Strategy and Service direction to implement the Next Generation ISR Dominance Flight Plan. The Next Generation ISR Dominance Flight Plan “seeks an integrated, balanced portfolio. To meet the challenges of a highly contested environment, the future ISR portfolio will consist of a multi-domain, multi-intelligence, government/commercial-partnered collaborative sensing grid that utilizes advanced technology.” Combatant Command ISR requirements will be addressed through a mixture of national, airborne, space, OSINT, and other capabilities in development.

2. Pending Congressional approval, the Air Force will end MQ-9 aircraft procurement in FY21, with final MQ-9A aircraft deliveries anticipated in FY24, based on reprioritization of capabilities identified in the 2018 National Defense Strategy. At the end of the FY20 procurement, the Air Force will have on order or in inventory upward of 350 MQ-9 aircraft to support 60 combat lines, which require up to 144 aircraft in combat at a time. Based on current requirements and attrition rates, sufficient aircraft are procured to support operations through the next decade and into the 2030s. The FY21 PB reduces 10 combat lines with each requiring 2.4 aircraft. Including approximately 10 aircraft in reserve, this reduces the Air Force requirement by 34 aircraft to just below 350 aircraft overall. Despite the end of aircraft production, we will continue to contract with industry for sustainment and modification support to ensure sufficient aircraft availability through the life cycle of the weapon system. The FY21 PB maintains 60 Government-Owned Government-Operated (GOGO) MQ-9 combat line force structure while it ends the Government-Owned Contractor-Operated (GOCO) MQ-9 program. Ending the MQ-9 GOCO program returns those government owned aircraft, ground stations and support equipment to the MQ-9 Program of Record (PoR) and reduces MQ-9 PoR out-of-hide maintenance and sustainment costs, supporting a sufficient fleet size that accounts for aircraft mishaps and aircraft approaching service life limits.

3. As the USAF looks at replacement capabilities for the MQ-9, the Next Generation ISR Dominance Flight Plan highlights the “need to repurpose and retool traditional ISR capabilities with disruptive technologies, non-traditional assets, sensors, and a hybrid force of 5th/6th generation capabilities. This will enhance warfighting capability across the global reach, power and vigilance tenets.” The only remotely piloted platform the Air Force is replacing with a manned platforms in the FY21 budget is outside of the ISR portfolio, where the Air Force will consolidate the battlefield airborne communications node (BACN) mixed fleet of EQ-4 and E-11A into a fleet of just E-11A. To do so, the BACN program is retiring the EQ-4 remotely piloted aircraft in favor of the E-11A manned platform, which is more suited to the mission and flies the majority of BACN support today. The typical E-11A sortie duration is limited to 12 hours or less and they never exceed the 16 hour max crew duty day. To further mitigate the human factor risks within the BACN program, the USAF outfits the E-11A with cutting-edge avionics and automation systems to reduce pilot workload. Additionally, the USAF is emphasizing training to identify and neutralize the human factor threats. At this time, no platform has been identified to replace the MQ-9A whether remotely piloted or manned. Furthermore, there is no planned expansion of manned aviation to replace the RQ-4 Block 30.

QUESTIONS SUBMITTED BY MR. VELA

Mr. VELA. The DOD recently reprogrammed \$532 million from the Air Force to the border wall for programs like F-35 Advance Procurement, C-130J and Light Attack Aircraft. Did the Office of the Secretary of Defense (OSD) consult with you before the reprogramming, and did you tell OSD that these funds were in excess of programmatic need? What is the operation impact to the Air Force as a result?

Secretary BARRETT. The Department of the Air Force was consulted prior to the reprogramming of \$532 million from the Air Force in support of the DHS request for the support along the southern border. The Department of the Air Force worked

with the Department of Defense to minimize the disruption that would be caused by the reprogramming of those funds. Providing this support to DHS will not adversely affect the military preparedness of the Air Force.

Mr. VELA. The DOD recently reprogrammed \$532 million from the Air Force to the border wall for programs like F-35 Advance Procurement, C-130J and Light Attack Aircraft. Did the Office of the Secretary of Defense (OSD) consult with you before the reprogramming, and did you tell OSD that these funds were in excess of programmatic need? What is the operation impact to the Air Force as a result?

General GOLDFEIN. The Department of the Air Force worked with the Department of Defense to minimize any potential disruption caused by the reprogramming of those funds. Providing this support to DHS will not adversely affect the military preparedness of the Air Force.

Mr. VELA. The Air Force in its 2021 budget cut its Reaper UAV procurements from 24 last year to zero. This will have a significant impact on America's UAV industry. Why the drastic change? And what is your plan to better address combatant commanders' ISR requirements?

General GOLDFEIN. 1. The decision to end MQ-9 aircraft procurement is based on reprioritization of capabilities identified in the 2018 National Defense Strategy. This shift in aircraft quantities does not change the Air Force's approach to addressing the NDS. Pending Congressional approval of the FY21 PB, the MQ-9A production line will begin shutdown in FY21, with final MQ-9A deliveries expected by FY24.

2. The Air Force continues to pursue our strategy described in the Next Generation ISR Dominance Flight Plan to better address Combatant Commander's ISR requirements. This flight plan is our encompassing strategy about how the service maintains and enhances decisive advantage amidst the reemergence of great power competition and rapid technological change in the digital era. Driving the strategy are three pathways: (1) pursuing disruptive technologies and opportunities; (2) using multi-role, cross-domain ISR collection capabilities to bolster readiness and lethality; and (3) investing in the foundational capabilities of people and partnerships to drive culture change. When our flight plan was published in Aug 2018, the former Deputy Chief of Staff for ISR and Cyber Effects Operations, Lt Gen (ret) Jamieson, clarified that, "We need to balance our ISR portfolio to meet the challenges of a highly contested environment. The future will consist of a multi-domain, multi-intelligence, government/commercial-partnered collaborative sensing grid. It will be resilient, persistent, and penetrating to support a range of options across the spectrum of conflict."

Mr. VELA. The President recently signed an Executive order encouraging the Federal Government to be less reliant on GPS. Can you talk to how Space Force will address this Executive order, specifically regarding changes in technology? Can you talk to Space Force's current ability to protect our GPS?

General RAYMOND. While the Executive Order on Strengthening National Resilience through Responsible Use of Positioning, Navigation, and Timing (PNT) Services is specific to the reliance of PNT services by federal and private sectors, the U.S. Space Force welcomes this effort to raise the Nation's awareness of the extent to which critical infrastructure depends on, or is enhanced by, PNT. We support the Office of Science and Technology Policy's effort to create a national plan to develop other PNT services independent of GPS while maintaining our commitment to enable a secure, robust, and resilient PNT capability. As the U.S. Space Force moves on a path toward building space combat capability, PNT remains an enduring no-fail mission. We are engaged in, and the FY21 budget request supports, multiple modernization efforts that ensure our forces around the globe can target and defeat threats at ranges that outstrip adversary weapons while preserving GPS services essential to our economic and American way of life. These modernized capabilities include new, more powerful civil and military signals, a cyber-hardened command and control system, and next generation military GPS user equipment. The U.S. Space Force also continues to support the Department of Defense in its defense of GPS's radiofrequency spectrum through appropriate regulatory bodies and processes. Consistent with the National Security and National Defense Strategies, the Department of Defense's PNT Strategy leverages the cornerstone capabilities provided by a modernized GPS, with diverse additional PNT sources in a modular open-system integration approach to deliver resilient PNT to the Joint force.

Mr. VELA. How will the Space Force organize to support the requirements of the combatant commanders? Will Space Force establish separate component commands, or will Space Force responsibilities fall under current Air Force component commands?

General RAYMOND. The U.S. Space Force will present appropriately organized, trained, and equipped forces to all combatant commands in accordance with DOD's Global Force Management Implementation Guidance. Along with members from the

other Services, Space Force personnel will be assigned to U.S. Space Command to ensure critical space capabilities are integrated and available to all combatant commanders in support of interoperability and effective Joint operations. Additionally, U.S. Space Command is developing Integrated Planning Elements (IPEs) comprised of members from all Armed Forces that will be embedded in other combatant command staffs. Space Force professionals will be included in these IPEs allowing our space professionals to be connected at an operational level to all U.S. warfighting commands, enhancing the lethality and effectiveness of the Joint Force.

QUESTIONS SUBMITTED BY MR. CISNEROS

Mr. CISNEROS. The United States created its newest military branch, the Space Force, in December 2019. The last time the U.S. created a new military branch was over seven decades ago, the United States Air Force. Though it is understandable that the organizational construct of a new military branch will take time to flush out, it is unclear if there will be a Space Guard and Reserve, separate from the Air Force or any other existing branch of service. On February 3, 2020, the Air Force submitted a report to Congress regarding the Space Force organizational plan, which offered no real clarification on the issue. My questions are these:

1. Will there be separate Space Guard and Reserve for the newly created Space Force?

2. If there is to be a Space Guard and Reserve, when can we expect to see these units chop from their current parent services to the Space Force?

Secretary BARRETT, General GOLDFEIN, and General RAYMOND. 1. The Reserve components play a vital role in the Space Total Force team and remains integral toward providing wartime surge capacity, operational depth, and seamless support to day-to-day space operations. Air National Guard and Air Force Reserve units currently conducting space missions are already aligned and integrated effectively with active duty units assigned to the Space Force. Over the coming year, the Department of the Air Force will develop, assess, and propose to formally integrate capabilities provided by the National Guard and Reserve into the Space Force. As directed by the FY20 NDAA, we have assembled a team of Air and Space leaders that includes members of the Guard, Reserve, active duty, and our civilian experts to look at that element of our Total Force management strategy. While we have not presupposed any outcome, we will continue to work with Congress if changes to existing authorities are required following that analysis by the Department.

2. As directed by the FY20 NDAA, the Department of the Air Force is assessing the Total Force construct through a 21st century lens and developing options for consideration by senior leaders across the Department of Defense. While we recognize this is a unique opportunity to consider a clean sheet, it is prudent to provide comprehensive options for decision-makers, developing and analyzing a Space organizational structure for the Guard and Reserve. We will inform Congress once our analysis is complete, and submit a proposal to Congress no earlier than the FY22 legislative cycle if changes to existing authorities are required.

QUESTIONS SUBMITTED BY MR. MITCHELL

Mr. MITCHELL. Secretary Barrett, can you detail the discussions taking place within the Air Force about community opposition and support for the Air National Guard F-35 Ops 5 & 6 basing decision? Are you considering downstream effects on the readiness and training opportunities for that F-35 squadron?

Secretary BARRETT. I am aware of comments received from the public, both in opposition to, and in support of, the F-35A Ops 5&6 basing actions. The 30-day "wait period" for Final Environmental Impact Statement (EIS) has ended. I weighed the results of the EIS and public input, and considered the operational needs of the Air Force and costs to our service in selecting the appropriate location for these squadrons. I have decided Truax Field, Wisconsin is Ops 5; Dannelly Field, Alabama is Ops 6.

Mr. MITCHELL. Secretary Barrett, when can the committee expect a final announcement from the Air Force about the Air National Guard F-35 Ops 5 & 6 basing decision?

Secretary BARRETT. The F-35A Ops 5&6 strategic basing final decisions are complete. Truax Field, Wisconsin is Ops 5; Dannelly Field, Alabama is Ops 6.

Mr. MITCHELL. Secretary Barrett, can you detail how the Air Force is comparing and contrasting the availability of training airspace in the Air National Guard F-35 Ops 5 & 6 basing decision? In the Final Environmental Impact Statement, it appears that the Air Force is simply ranking the training airspace as adequate or not.

Is that an accurate statement? Alpena Special Use Airspace, for example, offers a substantially larger area and more diverse conditions for training compared to other airspaces.

Secretary BARRETT. The Air Force Strategic Basing Process assessed, amongst many factors, the availability and quality of training airspace utilizing an operational perspective to conduct a detailed analysis on how well each location could meet the F-35's Ready Aircrew Program (RAP) training requirements. The training airspaces near each base were quantified based on size, altitudes, availability, and proximity. Taken together, this did not result in a single pass/fail grade; rather, it was a comparative assessment of how well each location could meet the operational mission. The Final Environmental Impact Statement (EIS) did not rank training airspace. The EIS assessment is focused on potential environmental effects from a potential basing decision at each location. The mission capabilities are assessed and evaluated in the broader Strategic Basing Process described above.

QUESTIONS SUBMITTED BY MR. SCOTT

Mr. SCOTT. Do you intend to issue a recommended reading list like some of the other service chiefs?

General RAYMOND. Yes. Each fall the Chief of Staff of the Air Force publishes a reading list intended to develop a common frame of reference among Airmen throughout the Department of the Air Force. The current list, developed by General David L. Goldfein, includes several recommendations of particular interest to Space Force professionals that I intend to build upon. We are currently coordinating our efforts within the Department to develop a Chief of Space Operations' Reading List that will coincide with the release of The Air Force Chief of Staff Reading List in the fall of 2020.

Mr. SCOTT. As you stand up the United States Space Force, what can be done now to set it up for success and avoid the Space Force becoming a "hollow force" in the future?

General RAYMOND. Proper initial resourcing: The Air Force submitted the first ever separate budget request for space as part of the FY21 President's Budget cycle, identifying approximately \$15.4B of transferred funding from across the DOD to resource the Space Force. With this budget request, the Air Force transferred all funding associated with space missions and functions to the Space Force, ensuring the new Armed Force was resourced to perform its mission. Future funding tailored to threats: Moving forward, the Space Force must have stable and consistent funding to enable it to address growing threats in the space domain. The Space Force is committed to minimizing cost and bureaucracy, but its end strength and budget should reflect rising threats from our adversaries. Having an independent budget will allow us to continue to advocate for DOD resources so we can protect and defend the space domain. Consolidation of space capabilities from across DOD: Establishment of the Space Force represents a once-in-a-generation opportunity to address long-standing challenges associated with fractured and disparate space architectures and capabilities. The Secretary of Defense has made it clear his vision is to consolidate the preponderance of space forces of all armed forces into the Space Force to address these challenges. To realize his vision, the Office of the Secretary of Defense is leading a study, with Army, Navy, and Space Force participation, to identify the missions, functions, and units that should transfer to the new service from across DOD.